APR 30 1888
CITY OF WASHINGTON

PRICE 15 CENTS

APRIL 28, 1888.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XXIII. REGULAR EDITION NO. 644.

ARCHITECTVRE

ENGINEERING

DECORATION

TICKNOR & COMPANY

CONSTRVCTION

BOSTON MASS.

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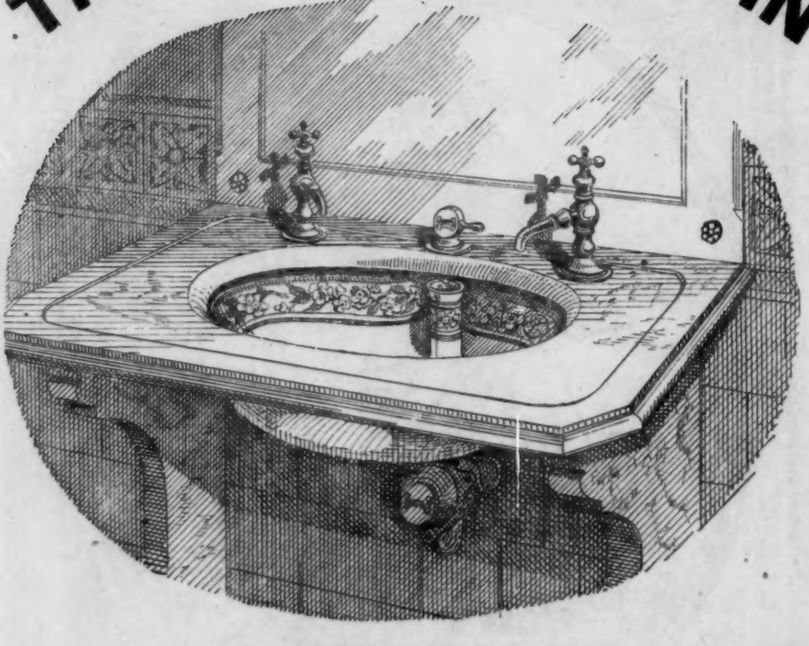

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THE AMERICAN ARCHITECT AND BUILDING NEWS.

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Entered at the Post-Office at Boston as second-class matter.

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A GOOD deal of discussion is going on just now about forms of building contract. The National Association of Master-Builders' seems to have opened the discussion, a year ago or more, by the appointment of a committee to consider the subject of drawing up a model building-contract to be officially adopted by the Association, but the matter has occupied the attention of various bodies of architects as well as builders, and as the Committee of the Builders' Association was sensible enough to invite a few architects to join in its deliberations the subject may fairly be said to be formally before the two professions. For our own part, we are inclined to think that the proper position for architects to maintain, unless applied to for advice by the builders, is that of critics, rather than promoters of any particular form. After all, the contract is between the owner and builder, not between the builder and the architect. It is the duty of architects to guard the interest of owners in contracts, so far as they can fairly do so, and they should, both individually and collectively, carefully avoid the appearance of going out of their way to invent forms, of contract which may be more acceptable to builders than those now in use. If the builders object to the current forms they are at liberty to say what changes they wish to have made, and if they unanimously resolve to insist on any stipulation whatever, the owners must submit, and the architects, if their powers of persuasion prove unavailing, have no further responsibility on that particular point. So far as the architects' own comfort is concerned, most of them would be glad to see an unchangeable form of contract adopted, covering all conceivable points, which would relieve them of the anxiety of drawing up contracts in their own way, but until the matter has gone beyond discussion, they should, as a class, feel themselves, to some extent, entrusted with the duty of defending the rights of owners in general. At the last Convention of the Association of Master-Builders, certain rules were drawn up, and recommended to local societies for adoption, which have already been printed at length in these columns; and the Canadian builders have recently adopted a form of contract prepared for them, and, it is said, will now refuse to sign any other.

IN some respects the Canadian form is more favorable to the owner than the rules of the American Association. The Canadian contract, for example, provides, as do most existing contracts on this side the line, that specifications and drawings shall be regarded as coöperating, so that work shown on one and not on the other shall be included as if mentioned in both, while the American rules provide that demands made by the plans, and not referred to in the specification, shall not be considered in the estimate offered. In our opinion the Canadian form is in this respect the only fair one. No architect in this or any other country can describe a building completely either by specifications or plans alone. Both sorts of documents together are barely enough to enable the most careful architect to show all the items which he wishes to include in the contract, and so long as both plans and specifications are open to the builder to study in making his estimate, there is no more reason for his leaving out anything shown on one because it is not mentioned in the other than there would be for omitting the items on certain pages of the specification. If the plans and specification do not agree, the architect is ready to decide which shall be followed in estimating, and to make a note of his decision, so that with reasonable care on the part of the builder, such as contractors' associations should endeavor to inculcate, there is no chance of misunderstanding under the Canadian form, while the American rule opens the door to all sorts of extras, quarrels and dissatisfaction. Again, by the Canadian contract the builder is not allowed to sub-let the whole or any portion of the contract without the written consent of the architect, while the Americans stipulate that the contractor shall not be restricted as to whom he employs as sub-contractor unless previously notified. It is not quite clear whether the American rule requires that the architect shall notify the contractor not to employ certain persons, or to obtain his consent to sub-contractors. If it means the latter, the stipulation does not change the ordinary form; if the former, every architect is to be obliged to lay himself open to a dozen libel suits, if he wishes to protect his client against the transfer of his contract from a good builder to a bad one, and is even then liable to see some strange rascal from a neighboring town substituted for the careful and responsible builder whom he had persuaded the owner to contract with at an extra price, for the sake of getting his work well done. In regard to forfeiture for delay, the Canadian contract provides that where delay occurs by reason of inclemency of weather, or strikes of particular trades, the architect shall extend the time of completion to a reasonable amount. The American rules say nothing about allowance of extra time for completion in case of special circumstances, but content themselves with the rather childish demand that where a penalty is to be exacted from the builder for delay beyond a certain date, a premium of like amount shall be paid to the builder if he completes his work before the given date. It ought to be obvious enough that if an owner has, for example, given a lease of the house he proposes to build from a certain date, as often happens, or if he has arranged to give up his present residence on a fixed day, and move into his new one, he has a right to be compensated for any damage he may suffer through the failure of the builder to keep the promises he has voluntarily made; while, as it is of no advantage to him to have his house on his hands before the time at which he or his tenant is ready to move into it, but rather an injury, since a house hurried in building is never so good as one constructed deliberately, there is no reason whatever why he should pay the builder a premium for encumbering him, before the stipulated time, with a building that he has no use for, and is, through the haste with which it was built, of less value than he intended and agreed to have it. Moreover, it should be remembered that the contract in present use, by which an allowance of time is made to the contractor in case of strikes or unusually bad weather, protects the interest of the contractor against his workmen at the cost, and often to the very great inconvenience, of the owner, who makes perfectly definite promises, in return for very elastic ones on the part of the builder. In addition to this concession, all builders and architects can testify that the penalty for delay stipulated in the contract is very rarely enforced. If the fear of it serves its purpose in keeping the contractor nearly to the time of completion to which he has agreed, this is all that is usually required of it, and cases where a builder who has honestly tried to keep his promises has been obliged to suffer for a few days' or even weeks' delay beyond the contract time of completion of his work are, in our experience, almost unknown. We think that the rights of both parties are better guarded by providing that forfeiture shall not be exacted for delay from causes which in the opinion of the architect could not have been reasonably foreseen or avoided by the contractor than by the Canadian clause, requiring the architect to extend the time of completion in case of strikes or inclement weather; but either is better than to set up, as the American rules will do, a struggle between the owner and the builder, to see who can extort, at the end of the work, most money that he has not earned, and is not justly entitled to, from the other.

ONE more point that should be carefully considered by all the projectors of improved building contracts is that of arbitration. Most of the old forms of contract, and many of the new ones, provide that disputes between builder and owner shall be settled by two arbitrators, one chosen by each party, who shall choose a third, and the award of a majority of the arbitrators shall be final. At first sight, this method of settling controversies has a certain charm, but to most architects it soon loses its attractiveness, and so good a lawyer as Sir Edmund Beckett denounces it in unmeasured terms. On no account, as he says, should a building contract contain an arbitration clause, which simply commits the owner to the most expensive kind of lawsuit over every trifling affair that the builder may choose to require him to "leave out." Moreover, as a builder's claim in court must be sustained by sworn evidence, subject to severe cross-examination, and to the opinion of the architect, whose testimony generally determines the case, while any sort of story may be palmed off on arbitrators, and an unscrupulous man is more likely to get something awarded to him that he ought not have by arbitrators than by a jury, the arbitration clause sets a premium on quarrelsomeness and bold falsehood. Fortunately, perhaps, the ordinary arbitration clause in a building contract is not binding. The rule is that an agreement between two persons to "oust the courts of their jurisdiction" is void, as contrary to public policy, and until the award of the arbitrators is made, either party can refuse to be bound by it, and apply to the courts. After it is made, however, under ordinary circumstances, there is no appeal.

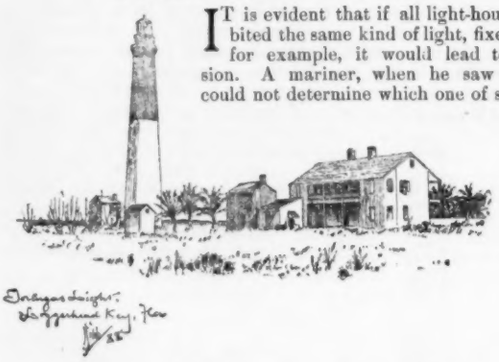
THE French "Architects' Mutual Defence Society," after about two years of existence, has, according to its last report, accomplished a considerable amount of work, and now finds itself full of business. It seems to have been very ably managed by its Committee of Administration, and to have enjoyed the advantages of consultation with lawyers of exceptional skill, for its efforts seem to have been almost uniformly successful, and it has won the earnest gratitude of those who have invoked its assistance. The routine of its operation seems to be, in case its aid is called in by a member, to ask for all documents relating to the matter in dispute. These documents, or copies of them, are discussed by the Committee of Administration, to see whether it is advisable for the Society to take up the cause. In case of doubt, the opinion of the counsel to the Society is obtained, and a decision arrived at, which is communicated to the applicant. If the decision is favorable to him, a retaining-fee is at once sent to the counsel for the Society, which then pursues the case to a final issue at its own expense.

IN many cases the appearance of the Society on the scene, as the defender of the rights of its members, leads to an immediate settlement of the dispute, and it would appear quite probable that as its reputation increases, and the list of its successful encounters with would-be oppressors grows longer, its influence in securing proper settlement of claims without recourse to law will be correspondingly extended. According to the Report presented to the General Assembly of the Society in 1887, seven cases were taken up on behalf of its members during the year and an eighth application had been under consideration, but not fully decided upon. Among the cases taken up was one involving an appeal to the Council of State on behalf of an architect, from the decision of a Prefectoral Council, which was successfully terminated, the higher court reversing, in favor of the architect, the decision of the court below, while another case pursued by the Society before the lower court and decided in favor of the architect, though not for the full amount claimed, was allowed to drop at that point by advice of counsel, the difference not being worth the trouble and cost of an appeal. This case, comparatively small as it was, will be interesting to many readers. The architect in question was invited to examine the ground and make sketches for a stable. He did so, and the sketches pleased the owner of the ground, who approved them, and directed the architect to make detailed drawings and specifications. When these were done estimates were made which showed that the cost would be five thousand dollars. Nothing more was done for about six months, when the architect called upon the owner to decide what he would do about the building. After some evasion, the owner replied that he had never intended to build a five thousand-dollar stable, that it would be ridiculous for him to think of such a thing, which would provide a more sumptuous lodging for his horses than he had himself. After more arguments, the architect brought suit for his pay, claiming one hundred and three dollars, or two per cent on the cost of the proposed building, for his work on the plans and specifications, besides seven dollars travelling expenses and two hundred dollars damages. The lower court held that the architect ought to have asked how much the owner wished to spend on his stable before making the finished plans, and that he was in error in thinking that the approval of a rough sketch gave him authority to make complete working-drawings without further consultation with the owner, and therefore decided that he was not entitled to any damages, and ought to be content with half the commission which he claimed for the working-drawings and specifications, and the whole of the travelling-expenses, and judgment was given to that effect. In the other case, the officials of a certain hospital pursued their architect on account of defects in the building designed by him, consisting mainly of partial decay of the stone through frost, cracks in the plastering, due, as they claimed, to improper lathing, and deflection in certain floors. Experts were appointed to examine the structure and found no indications of any other defects than these, and on appeal, the Council of State decided that such defects constituted simple imperfections (*malfaçons*), which, according to the well-settled law in France, were not to be regarded as vices of construction, threatening the solidity of the building, and could not therefore engage the special responsibility of the architect, and the hospital authorities were condemned to pay all the costs, as well as the expenses which the architect had incurred in defending the suit.

WE all take an interest in our dinners, and it will interest many people to know how fresh meat is now transported, by thousands of tons, from North and South America to England and France. It is only a few years since vast quantities of live cattle were carried across from New York and Boston to Liverpool, to be killed and eaten in Europe, and rumors were current that in some of the great passenger steamships, in dull times, a part of the staterooms were removed, to make room for cattle-pens. After some years, during which the cattle-shippers often suffered severe losses through disease or accident, the business fell off, and is now almost completely abandoned; the cattle being killed and dressed in the country where they have been raised, and shipped as meat, in vessels, which are, by ingenious processes, kept at a low temperature during the voyage. The means by which this low temperature is maintained, now consists, according to *Le Génie Civil*, of machines for blowing cold air into the meat store-rooms in the hold of the vessel, the air being cooled simply by expansion. As every one knows, the old-fashioned freezing-machines employed the expansion of condensed ammonia-gas as a refrigerating agent, conveying the cold current to the place where it was to be used by means of glycerine, or some other liquid not subject to freezing at ordinary temperatures. By the new method, the air is cooled by its own expansion, and then forced directly into the rooms. The air is first drawn into a condensing cylinder, where it is compressed under a pressure of about fifty pounds to the square inch. This greatly reduces its volume, and raises its temperature to nearly three hundred degrees, Fahrenheit. The next step is to carry off the surplus heat, which is done by means of a current of sea-water, circulating around the condenser, or rather around a series of tubes, into which the air passes from the condenser. To cool it still more, and cause the deposit of the watery vapor contained in it, the air next passes into another series of tubes, which are exposed to the current of cold air returning from the meat store-room, and is then drawn into the expansion cylinder. On being allowed to expand here, the temperature of the air falls immediately to about seventy degrees below zero, Fahrenheit, and the last traces of moisture are deposited as snow. Wooden tubes then convey the chilled air to the store-rooms, which it reaches at a temperature of about zero, Fahrenheit, and, after circulating about the rooms, is drawn back by an aspirating shaft to the refrigerating machine. The thermometer in the store-rooms never rises to the freezing-point of water, so the meat is kept continually frozen from the day of its shipment, perhaps at Melbourne or the La Plata River, until its arrival in the London Docks, where it is found to be indistinguishable from the best fresh beef and mutton. The store-rooms are protected against the entrance of heat by conduction from the outside by means of double walls and floors, packed with powdered charcoal.

ANCIENT AND MODERN LIGHT-HOUSES.[1]—XX.

CHARACTERISTICS OF LIGHT-HOUSES.



IT is evident that if all light-houses exhibited the same kind of light, fixed white, for example, it would lead to confusion. A mariner, when he saw a light, could not determine which one of several it might be, especially if he were uncertain as to his reckoning. This difficulty was overcome by having different numbers of lights at neighboring light-stations. For example, on Little Brewster Island, Boston Harbor, there is one light, at Plymouth there are two lights at the Gurnets, at Nauset Beach, Cape Cod, there are three lights, at Chatham two and at Monomoy Point one light. This device is both expensive and clumsy, and as the needs of commerce require intermediate lights to be established from time to time these groups of lights lose in a measure their distinctive character.

More modern science has devised other and better means for making the lights distinctive. This is done by changing the colors of the lights and by making them fixed or flashing or a combination of the two. But two colors are used, white and red; the latter color is obtained by using a chimney of ruby glass on the lamp or a pane of red glass outside the lens. Red light penetrates fog better than any other color, and it is for this reason that it is used to the exclusion of the rest.

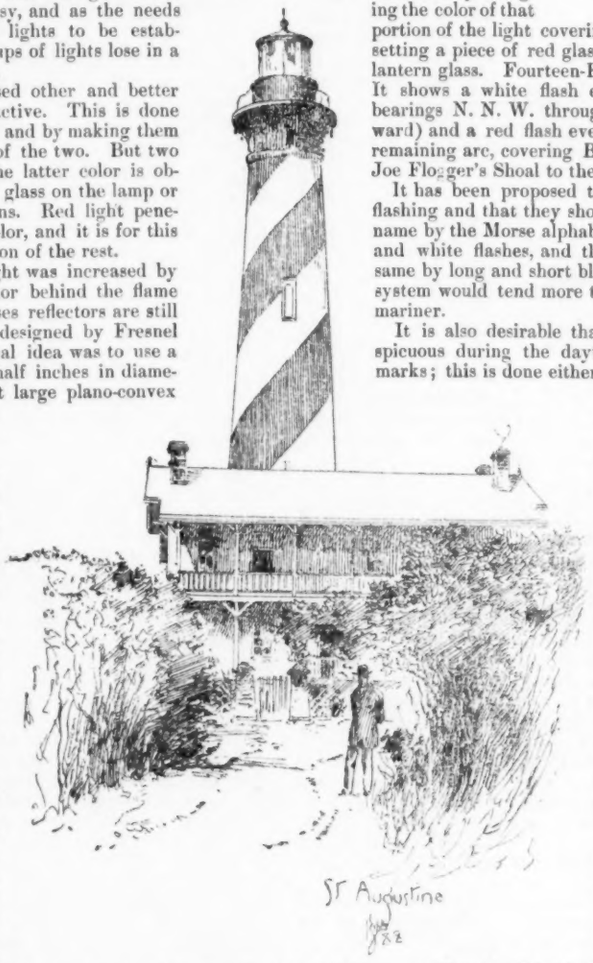
Formerly, the intensity of the light was increased by placing a silvered parabolic reflector behind the flame of the lamp, and in some light-houses reflectors are still used, but in most cases the lenses designed by Fresnel have been substituted. His original idea was to use a large central flame three and one-half inches in diameter and to arrange around it eight large plano-convex lenses three feet three inches high by two feet six inches wide, so as to refract the light.

This form of lens was improved by Condorcet for burning-glasses in 1788. If a lens three feet three inches in diameter were ground to a continuously spherical figure it would attain a great thickness at the axis and the loss of light by absorption in its passage through the thick glass, as well as by spherical aberration, would be considerable. But light-house lenses are so formed as to avoid these disadvantages. The figure shows a section and elevation of one panel of a lens.

If a lens has eight of these panels it will send out radially eight beams of light, and if the lens is made to revolve the observer would see flashes alternated by dark intervals. This is known as a *flashing white light*. If alternate panels are covered with panes of red glass it would be *flashing red and white*. It will readily be seen that quite a number of characteristics can be made by altering the number of panels and by covering up more or less of them with red glass.

The above is only suited to flashing lights. It was not until Fresnel extended his researches to the improvement of fixed lights that he completed the system of light-house illumination. He conceived the idea of forming a barrel of glass having the same profile as a vertical section through the axis of the lens just described. Such a lens allows the rays from a lamp in its centre to spread freely in a horizontal plane, while it only refracts them vertically, thus producing a powerful band of light equally all round the horizon.

If flash panels, consisting of a set of vertical prisms, be made to revolve around the above lens, it becomes fixed white varied by white flashes; if half of the flash panels are alternately covered with red glass, the characteristic would be fixed white varied by red and white flashes.

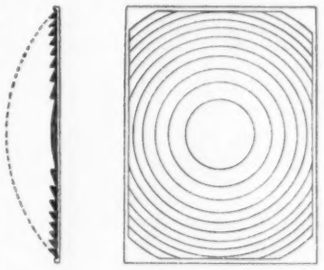


St Augustine

The various characteristics in use on our coasts are:

Fixed White	F. W.
Fixed Red	F. R.
Flashing White	Flg. W.
Flashing Red	Flg. R.
Fixed White varied by White Flashes	F. W. v. W Fl.
Fixed White varied by Red Flashes	F. W. v. R. Fl.
Fixed White varied by Red and White Flashes	F. w. v. R and W. Fl.
Flashing Red and White	Flg. R. and W.

The flashing lights are further distinguished by the interval of time between the flashes. For example, Boston Light is flashing white every thirty seconds; Gay Head, on the western point of Martha's Vineyard, is flashing white and red, interval between flashes, ten seconds, every fourth flash red; Sakonnet, on little Cormorant Rock, R. I., fixed white for thirty seconds, followed during the next thirty seconds by three red flashes at intervals of ten seconds.



Section and Elevation of an Annular Lens.

Dangerous shoals or rocks in the vicinity of light-houses are frequently indicated by changing the color of that portion of the light covering the danger. This is done by setting a piece of red glass of the proper width against the lantern glass. Fourteen-Foot Bank Light is a case in point. It shows a white flash every fifteen seconds between the bearings N. N. W. through E. to S. S. E. ½ E (from seaward) and a red flash every fifteen seconds throughout the remaining arc, covering Brown's Shoal to the southward and Joe Flogger's Shoal to the northward.

It has been proposed that all important lights should be flashing and that they should spell out the initials of their name by the Morse alphabet, by using long and short or red and white flashes, and that the fog signals should do the same by long and short blasts. I fear, however, that such a system would tend more to confuse than to aid the ordinary mariner.

It is also desirable that the light-houses should be conspicuous during the daytime, as they make excellent day-marks; this is done either by their shape or by some peculiarity in the way they are painted. When the background is dark they are usually painted white and when the background is light, the towers are either left the natural color, if built of brick or stone, or are painted some dark color. Sometimes both white and some dark color are used in horizontal bands, spirals or checkers. West Quoddy Head, Maine, has alternate red and white horizontal stripes. At Sankaty Head, Mass., the tower is white near the top and the bottom, with a red band in the middle. Fourteen-Foot Bank is brown. At Cape Henry, Va., the base, service-room and lantern of the octagonal tower are black; the shaft is colored on each face half white and half black, alternating so that the upper and lower halves of the faces show alternately black and white. At Cape Hatteras the tower is colored in alternate zones or belts of black and white, each zone twenty-two feet wide. Cape Lookout, N. C., is in black and white checkers. At Hunting Island, S. C., the tower is white from the base to the height of foliage of the background, the portion above this being black. At St. Augustine, the foundation of the tower is white, with a black cornice; the shaft is colored with black and white spiral bands. At St. Pierre de Royans, France, the plan of the light-house is a square. As it is intended as a day-mark, the upper part has been enlarged to obviate the possibility of confounding it with the steeples of the tower of Royan, and it is also painted in wide bands of red and white. The sketches show the appearance of some of these light-houses.

[To be continued.]

[1] Continued from page 175, No. 642.

OLD MASTERS OF THE NEW YORK HISTORICAL SOCIETY.

Les Enfants du Rhone. M. Pagny, Sculptor.

IN an unknown, unfrequented, and rather unkempt quarter of New York stands the Library and Museum of the New York Historical Society. From the exterior the building looks quite promising, and, occupying as it does a corner of the street, one is naturally led to imagine that within it is airy, spacious and well-lighted, a place where the winter sun comes early and lingers late; but such is not the case. What may have been the original purpose of the building would be hard to determine, if indeed it was ever known, but from its internal make-up one might say it was intended as a tomb for the sacred bull Apis, or a burial vault for the Old Masters, and as a matter of fact it now subserves both of these purposes.

The vestibule and staircase with their shaded windows look dingy enough after the open street, but their lighting is as sunlight unto moonlight compared with the main building. Entering this, the visitor finds himself at the bottom of a three story, well-like interior — the light, such as there is, coming from the roof. On bright days the top gallery is visible except in remote corners, the second floor is not satisfactorily seen at any time, the first floor in its recesses is sometimes explored by the light of a candle, and presumably the ground floor requires the full flare of an electric light to see anything at all. Small, stuffy, insufficiently lighted and parsimoniously aired, this place answers as the junk-shop receptacle of the extensive and valuable collections of the New York Historical Society. Here in one grand *omnium gatherum* are upwards of 75,000 books and manuscripts, 62 marbles, nearly 1200 lots of Egyptian and Assyrian antiquities, and 800 pictures, to say nothing of the miscellaneous material which has been kindly unloaded upon the Society at different times and which has not yet found its way into the catalogue. How the Society has come into the possession of these valuables is a matter of history: the liberality of citizens gave it the Abbott Collection of Egyptian antiquities; James Lenox presented the Nineveh sculptures; and the collections of Messrs. Reed, Bryan, Dürr, and others furnished the pictures. How the Society has taken care of the legacies left to it is also a matter of history which reflects no great credit upon its members. There is a wounded-snake sort of enterprise now dragging its slow length along, looking toward more suitable quarters, and it is to be hoped it will succeed though such action should have been taken twenty years ago.

It would be useless to look for much system or arrangement of materials in such wretched, overcrowded accommodations as the Society at present possesses. Doubtless the immediate custodian of the collections has done the best he could, and in the department of books system perhaps does prevail. The sculptures are set up in chance places and could not very well be confused. The Egyptian antiquities are well enough cased in some respects, but are badly classed, oftentimes erroneously labelled, and catalogued in a primitive manner out of all keeping with the present advanced state of Egyptological knowledge. The pictures have suffered most of all. They have been hung without regard to any system whatever. The collections are mixed, the artists are mixed, the schools are mixed. Wherever an unoccupied spot could be found there a picture was nailed until now they occupy all the wall-space from floor to ceiling, all of the vestibule and staircases, and some if not most of the door-jambs, railings, and supporting columns. By a strange fatality the best pictures seem to have the worst berths, if there is any choice about it. Many of the Italians are placed so high as to be lost in the gloom, while a number of Dutch pictures are placed on the floor where the last sweep of the washer-woman's mop has liberally sprinkled them with dirty water. Possibly patriotism and not artistic taste gave Cole, Kensett, and Durand places on the lines which should have been occupied by their betters. The catalogue of the pictures is a conglomeration of facts, mistakes, false assignments, and adulatory remarks which well supplements the hanging. It seems to have been compiled by the donors of the pictures who evidently thought that every old picture was a good picture and every good picture was by a god or a demi-god of art. Hence it is that in a number of cases the great masters get credit for the works of their imitators and pupils, and occasionally a Dutchman gets mistaken for a German or an Italian. That the Society in the year 1887 should republish without revision this mass of clerical stupidity and art-ignorance is only another illustration of their general indifference to the trust reposed in them.

(harleston main light.. Morris Island, S.C.

He who would attempt to bring order out of this disorder is a bold man — much bolder than am I who have for my purpose in this paper merely the casual noticing of some few of the principal pictures shown. The preface to the catalogue informs us that this is "probably the largest permanent collection yet exhibited on this continent," and it might have been added, as regards old pictures, the very best that this country possesses. That the genuineness of many of the canvasses is questionable does not prove them worthless. There are perhaps a hundred or more of the pictures that are excellent, no matter who painted them, and hardly any of the pictures lack interest from the point of view of history. The pity is that they are not in some place where art-students could see and study them, for they could teach many a valuable lesson. At present they serve no purpose and are sadly in need of soap, warm water, light, and fresh air.

The most notable and possibly, the most valuable picture in the collection is the "Infanta Margarita" of Velasquez. It is the child-portrait of Marie Thérèse, daughter of Philip IV and afterward wife of Louis XIV, and if I am not mistaken there is a similar portrait of her at about the same age in the La Caze collection of the Louvre and another painted at an earlier age in the Belvedere at Vienna. It is a bust portrait, three-quarters turned to the right (the one in the Louvre is, I think, turned to the left), and shows a rather surly-looking child of perhaps twelve years with an enormous headdress of blond curls ornamented with feathers and jewels. The subject is not at all of a nature to please the average person and to the flippant it would appear rather ludicrous, but the painter has given the face a character, a haughty dignity seldom seen in a child, which commands our respect. The painting of it is in the strongest style of Velasquez, perfectly simple and devoid of catchy effects of light or of color, yet telling in its strength. He handled a brush in a way that would seem to baffle imitation. Neither the grounding or the finishing of a picture interested him much; he began with a full brush and ended in the same way, painting with the ease and simplicity of an ordinary house painter yet working with an object well in view. The portrait of the Infanta shows this manner of work and there can be little doubt of its genuineness. On the contrary the "Spanish Lady and Children," a portrait group on a large canvas, attributed to this master is very little in his style. The lights are too sharply contrasted with the deep shadows of the background and the colors are too spotty, catchy and florid for Velasquez. More likely it is a later Italian work but nevertheless a good one if perhaps a little bizarre in method. The "Portrait of Cinq Mars," which though "skied" may be well seen by climbing a ladder near at hand, is another good piece of painting but there is little except its sobriety to warrant its assignment to Velasquez. This is true also of the "St. John the Baptist" which is weak in flesh notes and handling as compared with the Infanta.

Murillo in the catalogue is made responsible for some half-dozen canvasses hung upon the walls but there is no certainty that any of them are genuine. "The Vision of St. Francis," showing the portrait head of an ecstatic monk with the eyes rolled heavenward, is probably by this painter, but it might easily be by one of his pupils or imitators. The full length of "St. Joseph" bearing the Infant in his arms and the "Adoration of the Shepherds" from the gallery of Marshal Soult look more like pictures of the Rubens school than

of the Spanish, but are not bad pictures from whatever school they may have emanated.

Of the Italian painters there seems to be a liberal representation from Cimabue all the way down to Titian, but again it is quite impossible to settle the matter of genuineness by internal evidence and the history accompanying the pictures is scrappy and hearsay in its nature. The pieces assigned to Cimabue, Guido of Sienna, Taddeo Gaddi and Giotto belong to the period when these painters flourished at least, and are valuable as illustrations of art-history if nothing more. The people who painted in those early days threw their whole souls into their work and if we moderns are blinded to the earnestness and honesty of their work by a misshapen hand or a stiffness in the pose of a figure, the fault is in us and not in the picture. A "Crucifixion," by Mantegna, is vouched for through a half-page note in the catalogue by "Mr. Michiels the distinguished critic," who thinks that "the whole picture bears the impress of a serene imagination; the coloring is sombre; the attitudes are distinguished by an air of majesty." Mr. Michiels also thinks that "there is afforded in no other gallery, public or private, in the world a similar opportunity to study the master and scholar (Correggio), side by side in works of unquestionable authenticity and the highest intrinsic merit." This refers to a sketch of the "St. Jerome" by Correggio, hanging near the "Crucifixion" of Mantegna, and a very handsome thing it is too, but to say of it that "never has the ecstacy of piety or the fervor of religious affection been better expressed" is rather more complimentary than exact. It is a good thing and like enough done by Correggio's own hand, but it is not one of his masterpieces.

Leonardo da Vinci executed some poorer pictures than the "St. John Weeping," attributed to him in the catalogue and declared to be his "on the high authority of Mr. Woodburn." It is undoubtedly of his school, if, perhaps, a trifle hard and mechanical for his individual brush, and as an example of Leonardo's method of handling light and shade, it would be an addition to any gallery. The second picture of "St. John" (No. 199) may possibly be by one of Leonardo's school, but even this is doubtful. The "Three Marys" by Leonardo's pupil, Bernardino Luini, bears unmistakable signs of its genuineness. The drawing is good throughout, and the sentiment and feeling of the piece is excellent. Unfortunately, the canvas is in bad condition, and it will probably be worse before it is better. A Perugino "The Adoration of the Christ," though signed and dated, is not in that master's usual style, but, for all that, may be by his hand and is certainly interesting.

In the same room, and near to the Perugino, are two pieces representing the "Birth and Resurrection of Christ," which "the donor wishes it to be understood" are authentic Raphaels. "Only the inexperienced and the uncultivated fail to trace in them the pencil of the divine Raphael," says the catalogue, and for fear of incurring the imputation of ignorance, we may admit all that the donor says and still have nothing but two pieces of poor drawing, bad color and worse painting. If the pencil of "the divine Raphael" may be recognized by these features, then we recognize it, but, unless I am very much in error, I have seen the originals of these two pictures in some one of the European galleries classed among Raphael's youthful performances in the same category with the "St. George" of the Louvre. Andrea del Sarto, the best *painter* among the Florentines, is credited with a "Virgin and Child with Angels," which is, unfortunately, elevated so far ceilingward that it cannot be well seen. From a distance it seems to lack the freshness and transparency of Andrea's painting, and the coloring is not characteristic. But this might be the result of time and careless handling of the canvas, though the picture is more likely to be by a pupil and not the master. The Fra Bartolommeo's, four in number, all have an apochryphal smack about them disturbing to notions of inspiration. The best of them is a "Portrait of Savonarola," presumably a copy or possibly a replica of the Rubiera portrait. Lacking in inspiration likewise are some questionable things which pass in the catalogue under the names of Domenichino, Botticelli, Zuccaro and others; while, on the contrary, a "Portrait of a Princess of Florence," attributed to Bronzino, is full of spirit and strength, and is quite worthy of that most excellent portrait-painter.

A picture of more than ordinary merit called "Christ Shown to the Multitude" is put down to Sebastiano del Piombo, and aside from its lacking the richness of color that we are accustomed to associate in our minds with this artist, there is not the slightest reason to doubt its genuineness. It is a thoroughly good picture, whoever painted it, and one of the many extra good things in this collection. "The Martyrdom of St. Lawrence," by Titian, is another picture of a simil.r kind and of even greater importance. The lighting is a little exaggerated, which is not an unusual thing with Titian, and the drawing is in places distorted, another liberty often taken by this artist which resulted sometimes in strong effects as this picture will witness. The color has become much toned down by age and the canvas has darkened, but the flesh-notes bear the warmth and richness for which Titian was celebrated. The subject in its composition and general treatment is well known, Titian having painted it three times with some variations of detail. One of the pictures is in the Escurial and another at the Jesuits' College in Venice. This third one, belonging to the Historical Society, is a signed canvas and has the authority of Kugler for its genuineness who esteems it one of Titian's most important works. The portrait of "Aretino the Poet," by the same hand, rather lacks in breadth of treatment for Titian. It is, nevertheless, a strong piece of painting, though the character of the sitter varies somewhat in the picture from what we are told of him in literature. Aretino was the concentrated essence of impudence as his own letters prove, while Titian makes him look like a great blushing booby with scarcely assurance enough to brush away a fly. There is a rather interesting inscription in French on the back of the canvas which reads as follows: "Collection of Alix, General-in-Chief of Westphalia. — This precious picture was found in the wagon of a vivandière, named Michau, who was killed at the battle of Marengo. After being in the possession of General Lemarois, it passed into the private cabinet of the Chevalier Denon, Director of the Musée Napoléon." There are three of the Aretino portraits extant, and probably this one is a replica and not a copy by a strange hand. There is also in this collection a "Portrait of a Lady" (No. 209) attributed to the "Style of Titian," which would not hurt the reputation of the master himself, for it is a very handsome piece of painting.

To satisfy one's self regarding the authenticity of the "Christ and the Disciples at Emmaus," which is laid at the door of Paul Veronese, would not be an easy matter. The subject is one that he used several times, and there is a picture in Dresden similar in many respects to this one. It looks like a Veronese, and whether his or the work of another, it is a remarkably fine thing for the Historical Society to possess. The "Abraham Discarding Hagar and Ishmael," is again in his style, but it is not so important a picture. There are a number of good things by others of the Venetian school, among them noticeably "A Prince of Palermo in Disguise," by Giorgione, a "Repose in Egypt," and an interesting copy after Giorgione, by Watteau, called a "Concert." Of Tintoretto there are two pictures, one of which "The Martyrdom of St. Sebastian," appears to have some good points, but in its hanging it is so much like Gildroy's kite that one can make nothing definite out of it. This is the case with a rich red and orange canvas attributed to Bassano, which is probably a gem of some kind, but in its present setting it will not be seen any more than one of the "purest ray serene" which has long reposed in the dark unfathomed care of the ocean.

A small sketchy "Pieta," assigned to Annibale Carracci, deserves more than a passing notice. It may be original or it may be a copy, for he used the subject several times, but whichever or whatever it may be, the picture in this collection contains very great qualities. The figure of the Madonna, seated and holding the head of the dead Christ in her lap, is full of intense feeling; and there is the power of death in the lines and modelling of the figure of the Saviour, beautiful in its depth and truth of realization. To describe in words what is art, is very like telling one what is musical harmony. It is to be felt rather than to be told, to be appreciated by the emotion it excites rather than by an appeal to one's understanding. The "Pieta" is quite indescribable, but its power breaks upon one immediately that it is seen. Decidedly it is a great thing in imagination, and one of the first pictures of the collection. The "Arion and the Dolphin," though a signed canvas by the same artist, is a weak, poor thing, rather ridiculous in conception and thin in painting. Of course, it is in an excellent state of preservation. Time has not cared enough about it to destroy or injure it.

The Dutch and Flemish pictures outrank all others in point of numbers, but many of them are of an inferior order, and there are also some copies masquerading as originals. Still, the genuine examples cannot be counted upon one's fingers, and among those of unknown origin there are some pictures of much strength and excellence. The Rembrandts, even if authentic, hardly add much to the intrinsic value of the collection. The "Combat of Cavalry" is somewhat in the manner of Rembrandt in the centering of light and in the coloring, but he could scarcely have been guilty of the badly distorted horse's head and neck at the right of the canvas, or the spottiness of the foreground. The "Portrait" (No. 328) whether in Rembrandt's early style, or by one of his pupils, is good, but not great in any sense. Of the pictures attributed to Rubens, the "Christ Bearing the Cross," looks very much like his in color and flesh-notes, but it does not show him to advantage; the "St. Catherine" is a trifle weak and lacks in depth, but is undoubtedly of the Rubens school; while the "Portrait of a Knight of the Order of the Golden Fleece," though it cannot be set down positively either to Rubens or his great pupil, has excellent qualities, and stands on its merits independent of a high name.

One would hardly receive a lofty opinion of Van Dyke as a painter by an examination of the pictures assigned to him in this collection, but likely enough they are genuine. He was an improvident genius who did not despise the pot-boiler as a means of raising funds, and his facility often led him into doing inferior work. The "Samson and Delilah" may be a sketch for the finished picture now in the Belvedere at Vienna as the catalogue suggests. The composition of the two is almost identical, but there is somewhat of a difference in the coloring, and the sketch lacks the strength of the finished picture which is rather an unusual thing in art, too. "The Crucifixion" was a theme he handled in several ways, and the picture here shown is one of his palpable attempts to keep the pot boiling, though it is not more than half bad considering that Van Dyke was not a brilliant success outside of portraits. The picture of "Charles I" and the "Portrait of a Lady" are not in his best style, though the former is characteristic and interesting from its

history. Three heads of the king in different positions are painted upon one canvas, and this was done to enable Bernini the sculptor, who had never seen Charles, to model a bust of him.

A very interesting-looking portrait catalogued under the name of "Francis (*sic!*) Hals" occupies the top berth on a high supporting column where just enough of it is visible to make out that the breadth of treatment noticeable in the work of Hals is not strongly marked on this canvas. But for all that it looks like a good picture and might prove a very superior one if it could only be inspected at closer range. The Terborch portraits, three in number, are extra good. They are in his manner and possess the dignity and character of his treatment if not its breadth. The Brouwers again are all excellent. It is very doubtful if a copyist or imitator could produce so fine a thing as a "Dutch Interior — Beggars Carousing," though they might easily enough imitate the signature attached to it. The freshness and effectiveness of Brouwer's manner of painting as shown in this picture would baffle any but those to the manner born. The subject of drunken, leering beggars in an ale-house may not be beautiful in one sense to some people, but the handling, the richness of the tones, the quality and characterization, make it beautiful in another sense. The two pictures of a "Robber examining Coin" by daylight and candlelight, one of them nailed to a door-jamb, are again in Brouwer's style, and capital things in painting.

"Teniers the Younger" appears in half a dozen different canvases of variable degrees of merit. "The Village Fete" (No. 352) is a very fair work and probably painted in his characteristic vein; the 353 and 354 are poorer in every way, and it is questionable if the picture of "Charles V leaving the Town of Dort" was painted by him at all. Jan Steen is not disgraced by having an "Interior Family Scene" attributed to his brush, though the justness of the attribution may be considered questionable again. The color of it is pleasing and the painting is good, especially the rendering of textures in the dresses, but on the other hand the drawing is clumsy and bungling in places, and there is something lacking in it that we do not generally feel in viewing Steen's work. This is still more noticeable in the "Family Fête" (No. 511) which can hardly be Steen's though it is hung too high to see anything about it more than its general appearance.

Several pictures of the Rembrandt school are remarkably good, especially the "Mother and Child" of Jan Victoor, a strong piece of flesh painting; the beautiful study of light and shade called "The Magi going to Jerusalem," by Leonard Bramer, who is also represented by a "Presentation in the Temple" of uneven strength; and the "Tobias and the Angel" attributed to Ferdinand Bol. The latter is a large and important canvas showing Tobit and Gabriel discussing and gesticulating like a couple of Socratic philosophers in an Olympic grove, and is very nice in textures, light and drawing. There are several Wouvermans authentic enough, but of little importance except the large "Departure of a Hawking-Party of Nobles from a Baronial Castle," a fine thing of much spirit and rich in coloring. It looks as though it might have come from the hand of an Italian or Spaniard — say the one who painted the "Spanish Lady and Children" attributed to Velasquez; but Wouverman painted in that style at times.

It is to be hoped that the visitor at these galleries will not fail to notice the beautiful little architectural piece "Château and Park," by Van der Heyden, nor the "Goblet and Lemon" attributed to Van Aelst, which is not hung so high but that its strength and beauty are apparent. It is worth while, also, to call attention in a general way, since individual mention of all the Dutch painters represented here is impossible, to several excellent Cuyps, some candlelight pictures by Honthorst, a number of marines by Van de Velde and Backhuisen, a portrait by that excellent painter Ravensteyn, a wind-mill by Jan Van de Meer, a number of small pieces by the Ostades, and some pictures by Dou, Netscher, Berghem, Both, Van Gelder, Francken the elder, Fyt, Hobbema, Massys, Philip de Champaigne and Van Eyck of more or less genuineness and interest.

The pictures of the French school are fairly representative in numbers if not over-strong in individual cases, but then it will be remembered that the old masters of France are rather few and far between as compared with those of Italy and the Low Countries. The Poussins appear advantageously enough, Nicolas with half a dozen canvases, of which the "Adoration of the Golden Calf" is a good example of his clever composition, classic style, lack of sympathy, weak values and tawdry color; Gaspard by several landscapes out of which expert logic could prove or disprove almost anything desired without satisfying any one as to truth or falsity of deduction.

There are several pictures of the school of Claude and one canvas of "Odysseus taking leave of Penelope" which seems, so far as a casual examination may determine, to be in the style of Claude himself. The subject and the treatment of the water, sky and architecture are certainly in his manner, but he, like every other artist of note, had his score of imitators and followers. The picture is good, especially in the painting of the water. Boucher, who did some clever if rather light-natured work during his life, hardly shows at his best in the two pictures by him in this collection. The "Winter Scene," with the girl in sledge without a hat and a man behind pushing, is heavy and not so bright in colors as Boucher usually painted, but it is unique, decorative, and very well worth having. The same may be said of the Greuzes half a dozen in number. They are not works of sublimity, but dashes of beauty lightly blown from the brush like sparkling spray from the wave. The "Nymph of Diana" holding the coral in her hand is a nice piece of drawing and a delicate, refined work throughout. To be sure she is not an austere Athena nor an Angelesque Sibyl; she is only an empty-headed young girl, but her beauty makes her welcome.

The Watteaus must all be taken with due allowance for the skilful fingers of Pater and other imitators. Among the half-dozen canvases attributed to him, only one of them — the "Scene from M. de Pourceaugnac," I think, shows in the brush-work of the drapery a close resemblance to the manner peculiar to the artist. "The Venetian Fête" (a nice color scheme) and the "Musicians" are both good pictures but they are not by Watteau. The decorative sketch of a ceiling now at Dijon of "France Triumphant after the Restoration of Louis XVIII" by Prud'hon, the fine portraits by Mignard and Rigaud, a well-painted church interior by Anton de Lorme and some pieces supposed to be by Chardin, Courtois, Bourdon, and others, are all interesting to look at if not very elevating in imagination or overpowering in execution.

The picture of "Christ and the Tribute Money" with the finely-painted heads of the monk and nun supporting it on either side and completing the triptych make one of the most interesting exhibits in the galleries. The head of the nun is a marvel of delicacy, and the centre-piece with its bright fresh coloring, good textures, and beautiful sky and background offers strong reminders of that famous painter, Albrecht Dürer. His name is signed to the picture and the style is his with the exception of the brush-work which is perhaps a little too heavy for Dürer and suggests the possibility of a clever copyist or imitator. However that may be, the picture would be quite as beautiful by the name of Smith or Robinson, and if it is not Dürer's then it is by some one who was not far behind him in ability though perhaps unknown to fortune and to fame. The Holbeins, two in number, are probably genuine, but hardly worth putting one's eyes out looking at them many times. A poor picture by a great artist is always a knock-down blow to a hero-worshipper and Holbein's "Interior of a Private Chapel," with the family of Count Valkeniers at prayer, does not make one feel like joining in the service. Much more satisfactory is the oft-repeated "Venus and Cupid" of Cranach, with its archaic appearance and honest hardness of line, or the handsome and genuine-looking portrait of Frederick Barbarossa. Often times blunt awkwardness is preferably too slipshod skill and Cranach's best is much to be preferred to Holbein's tolerable.

The English school has no representation worthy of mention. There are portraits by Lely, Lawrence and Reynolds, but no one would care to look at them the second time. On the contrary, the only original and indigenous American school is brought to the front with a flourish of trumpets and made to occupy the seat of honor. Thomas Cole with his "Course of Empire," an epic poem written with a paint-brush through six canvases and innumerable cantos, stands first in size, first in the catalogue, and evidently first in the hearts of his countrymen. The other members of the Hudson River Olympus are well-known and those who are not familiarly acquainted with their landscape art can easily become so by visiting the galleries of the Historical Society where their quality is numerously and conspicuously displayed. The Copley-Pease-Elliot-Trumbull portraits in the possession of the Society are materials of another character and sufficiently interesting in themselves.

John C. Van Dyke.

The Illustrations

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

INTERIOR OF EMANUEL BAPTIST CHURCH, BROOKLYN, N. Y. MR. FRANCIS H. KIMBALL, ARCHITECT, NEW YORK, N. Y.

[Gelatine Print issued only with Gelatine and Imperial editions.]

EXTERIOR OF THE SAME CHURCH, AFTER AN ETCHING BY MR. HENRY S. IHNEN.

WHEN the architect was asked by the committee to make drawings, they required him to conform to the accepted form of seating in Baptist churches, with a pitched floor. There were to be no columns to intercept the view of the chancel, and galleries were to be provided. The lot being 90 x 89 feet, or nearly square, it seemed best to try to give length, otherwise the auditorium would have the effect of a hall, not a church. Two columns were introduced, as will be seen by the plan, which are not in anybody's way and are purely constructive, not merely ornamental. They support longitudinal trusses which are indicated in the church by heavy beams. By this, the effect is that of a nave with transepts, and the square form is lost sight of. These columns also support the angle where galleries meet.

The next feature is the baptistery. The regular arrangement of a tank in the floor, requiring the pulpit to be moved to one side, seemed undesirable, therefore, it has been made a *fixture*, the height being regulated so that the pulpit is never disturbed.

The exterior of church is of Ohio stone. The chapel in the rear was designed by Mr. E. L. Roberts, and built three or four years ago. The new work begins at the nearest chapel tower, marked by the small circular turrets. To a certain extent it was necessary to use the same material used in chapel, and follow its main lines.

The interior of the church is finished in oak, antique, the vestibule in Scotch red sandstone, oak ceiling, mosaic floor.

The ceiling of church is of wood, the facing-up of chancel and interior columns of Scotch sandstone.

The decorations were done by Mr. W. H. Day, and is one of the best examples of his work.

The style is early French Gothic, thirteenth century, the detail very simple.

STATUE OF LOUIS PHILIPPE AND MARIE AMÉLIE. M. J. A. MERCIÉ, SCULPTOR.

STATUE OF MARIE ANTOINETTE AT ST. DENIS, FRANCE. M. PIERRE PETITOT, SCULPTOR.

THIS statue and the group of Louis Philippe and his wife show one manner of preserving the memory of historic women, while the cut of the dishevelled and unfinished monument at the head of the article on the monuments to the memory of the mother of George Washington, which may be found in another part of this issue, shows a less pleasing manner of perpetuating a worthy woman's fame.

TOMB OF THE CARDINAL MAZARIN IN THE LOUVRE. G. COYSEVOX, SCULPTOR.

TOMB OF MACHIAVELLI IN THE CHURCH OF SANTA CROCE, FLORENCE, ITALY. INNOCENZO SPINAZZI, SCULPTOR.

MR. BARTLETT'S account of the monuments and statues erected to the memory of Thomas Jefferson, suggests the exhibition in comparison of some of the monuments erected in other countries to the memories of famous statesmen.

SOME AMERICAN MONUMENTS.—I.

MARY WASHINGTON'S MONUMENT.

The unfinished Monument to Mary Washington, near Fredericksburg, Va.

THE parents of Washington, Mary Ball and Augustine Washington, were married in 1730, it is not known where. An unsupported tradition says that the ceremony took place in England. Both were natives of Virginia. Their first home was on the Westmoreland estate in the county of that name, and which has always been regarded as Washington's birthplace. Their house having been burned, they removed to another estate of theirs in Stafford County on the east side of the Rappahannock River, opposite Fredericksburg. Here Augustine Washington lived until his death on the 12th of April, 1743, at the age of forty-nine. He was buried at Bridge's Creek in the tomb of his ancestors. Little is known of his character or his acts. His occupation was that of a planter. Mary Ball was his second wife and by her he had six children, George, Betty, Samuel, John Augustine, Charles and Mildred.

After her husband's death, Mrs. Washington brought up her children and managed her large property with admirable sagacity. "Her disposition was kindly, just and religious; her manner dignified, reserved and sometimes, we suspect, even awful." Her stepson, Lawrence Washington, said: "Of the mother I was more afraid than of my own parents; she awed me in the midst of her kindness, and even now, when time has whitened my locks, and I am the grandfather of a second generation, I could not behold that majestic woman without feelings it is impossible to describe." Washington treated her not only with profound affection, but with the utmost deference; his letters to her, when in the public service, always began with the words "Honored Madam," and he was unwilling to engage in any important enterprise until he had obtained her consent. During the Revolution she removed for greater security to the town of Fredericksburg; there Washington kept her advised of the course of the struggle, and there, after several years' separation, he visited her on his return from the victory of Yorktown.

She had a small farm near Fredericksburg which she superintended in person, driving out to it every day in a two-wheeled chaise to direct the laborers. She employed an overseer, but he was to follow her instructions implicitly. She was a rigid disciplinarian. Both in the field and in the house her word was law. Lafayette paid her a visit in 1784 when she was seventy-eight years old. He found her at work in her garden, wearing a homespun gown and a plain straw hat over a lawn cap. She received him gaily and without embarrassment and talked with intelligence and animation of the events of the war and the prospects of the country. To the Marquis's praises of her son, she delighted him by quietly answering: "I

The Empress Josephine.

am not surprised at what George has done, for he was always a good boy." She died in 1789 at the age of eighty-three and was buried in a small cemetery belonging to the Washington family, situated in the northwestern suburb of Fredericksburg.

There are two current stories concerning the unfinished monument that stands near the cemetery. The romantic one is that a merchant of New York, who was courting Miss Custis, a granddaughter of Mrs. Washington, resolved to build a monument to the memory of the latter as a mode of showing the ardor of his affection for the former. So long as his suit progressed favorably the work went on smoothly, but the lover having finally been rejected by the fair maiden, it was unhappily abandoned. The monument stands within view of Fredericksburg. The corner-stone was laid with imposing ceremonies on the 1st of May, 1833, by President Jackson. It is built of white marble and is sixteen feet high. The block of stone, seemingly red sandstone, intended for the shaft, lies half buried in the earth near by and uncut. It is about seventeen feet long. Curiosity hunters have broken off all the edges and corners of the finished part and the irreverent marksman has dotted the surfaces with the marks of his bullets.

It was while President Jackson was on his way to perform the patriotic duty of laying the corner-stone, quietly sitting in the cabin of one of the river steamers, that Lieutenant Randolph, who had been but recently cashiered from the navy, suddenly pounced upon him and pulled his nose.

The other story is that a Mr. Burroughs of New York City, visiting Fredericksburg and being impressed with its historic associations and especially with the fact that it had been the home of the mother

of Washington and was her last resting-place, set on foot a project for a monument to her memory. It was completed to its present state and then abandoned.

From time to time a wandering tourist has called attention through the newspapers to this disgraceful example of a nation's neglect; then some one would attempt to explain why Mary Washington was so little known, and there the interest in the subject ended.

In April, 1886, the Congressional Committee on the Library considered a bill which proposed to appropriate $20,000 for the completion of the monument and for grading and enclosing with an iron fence a space of thirty-four feet square around its base, the money to be expended under the direction of the President or such officer as he may designate. The bill provided that no part of the money should be expended until the lot upon which the monument is situated shall be conveyed to the United States. And the committee recommended that the appropriation be made for the object specified when the Secretary of War shall have become satisfied that the State of Virginia has secured a valid title to the ground upon which the monument is situated, and when the State gives assurances that it will keep the monument and grounds in good repair and proper condition. What came of this proposal is not known to the writer.[1]

Mr. B. J. Lossing published in 1886 a book entitled "*Mary and Martha, the Mother and the Wife of George Washington.*" It contains a very complete collection of personal memoirs, reminiscences, minutes of conversations, and facts concerning these illustrious women, and much about the private life of Washington.

MEMORIALS TO THOMAS JEFFERSON.

Thomas Jefferson left among his papers after his death in his own handwriting an inscription in Greek for a slab designed for his wife's grave and one which he deemed appropriate for his own, with a design of the monument on which he wished it inscribed. Concerning his own tomb he wrote as follows: "Could the dead feel any interest in monuments, or other remembrance of them, when, as Anacreon says, 'we shall lie a little dust, the bones having been loosed,' the following would be to my manes the most gratifying: on the grave a plain die or cube three feet square, without any mouldings, surmounted by an obelisk six feet in height, each of a simple stone; on the faces of the obelisk the following inscription and not a word more:

HERE LIES BURIED
THOMAS JEFFERSON,
AUTHOR OF THE DECLARATION OF AMERICAN INDEPENDENCE,
OF THE STATUTE OF VIRGINIA FOR RELIGIOUS FREEDOM,
AND FATHER OF THE UNIVERSITY OF VIRGINIA.

And on the die of the obelisk might be engraved:

BORN APRIL 2, 1713. DIED ——

Because by these as testimonials that I have lived I wish most to be remembered. To be of coarse stone of which my columns are made that no one might be tempted hereafter to destroy it for the value of the material."

It is familiar to every one that Jefferson's famous and beautiful home in Albemarle County, Va., was on the summit of a little mountain, which he called Monticello, that belongs to the south-west range of hills laying east of the Blue Ridge and which rises about five hundred feet above the surrounding country. Mr. John G. Nicolay, in a recent article in the *Century Magazine*, writes as follows about this mountain home:

"He seems from the beginning to have appropriated the little mountain to himself for his own uses. Probably this feeling of personal ownership came to him even in boyhood, as by right of discovery and exploration. Tradition makes it the scene of his first and closest friendship. He and his college friend, afterwards his brother-in-law, Dabney Carr, found here a favorite oak, whose inviting shade they made a resort for pastime and study. They finally became so attached to this spot that they made a mutual promise, the survivor should bury the other at the foot of this tree, and upon Dabney Carr's early death, Jefferson fulfilled the romantic pledge. This incident is said to have originated the little cemetery on the slope of Monticello, where the dust of Thomas Jefferson now lies in its last repose."

The First Monument to Thomas Jefferson.

The cemetery was to be enclosed by a stone wall covered with evergreens and adorned with an antique Gothic temple, pedestals with urns, a pyramid of rough stone, a cascade, a grotto with a statue, inscriptions, a moss couch, a concealed æolian harp and other funereal devices, but like many other of Jefferson's princely projects, this was never carried out. Near his grave lie buried Mrs. Jefferson, their two daughters, Martha and Maria Epes, and their son-in-law, Governor Randolph.

Seven years after Jefferson's death, his grandson, Col. T. J. Randolph, erected a monument over his grave of New Hampshire granite, made after the design above described, and enclosed the yard with a stone fence. The inscription was cut on a slab of marble and set into the side of the obelisk. The graves of the other members of the family were covered with marble slabs, and the inscriptions cut upon the die of the monument.

Jefferson's democratic fancy in regard to the safety of the "coarse stone" was not a sufficient protection, for in less than three years after the structure was completed the slabs on the graves were two-thirds gone and the monument greatly mutilated by visitors who came there to the number of a thousand a year: yet the little cemetery is four miles from the nearest post-office at Charlottesville.

THE NEW MONUMENT.

In 1882–83, Mr. Manning, a member of Congress from Alabama, being detained at Charlottesville by a railroad accident, went to Monticello to visit Jefferson's grave. He was so shocked at the shameful condition in which he found it that he determined that a new monument should be made and a good fence built around it. He therefore introduced a bill asking Congress for an appropriation of $10,000, afterwards increased to $15,000, the money to be expended under the direction of Secretary Frelinghuysen.

The New Monument, designed by Col. T. L. Casey.

The Government at first proposed to limit its expenditure to the fence for enclosing the graves, but Mr. Manning insisted upon having the entire cemetery enclosed. The new monument was designed by and erected under the supervision of Col. Thomas L. Casey in 1883, and the cemetery enclosed by an iron fence thirteen feet high. The paper upon which Jefferson made his design and wrote his directions about the monument was given to the State Department by Miss S. M. Randolph, and she, with other of Jefferson's descendants, desired that the new monument should be an exact copy of the old. To their great mortification their wishes were not gratified.

It is a pity to relate that the grave desecrators of the vicinity have already begun their work and it is feared that the new structure will fare the same fate that followed the old. The chief marauders are negroes from Charlottesville and it is found impossible to punish them.

Mrs. E. W. Harrison, one of the descendants of Jefferson, writes, that the Government wished to make an approach to the cemetery from the road, and through a part of the old Jefferson estate, bought after his death by Captain U. P. Levy, and now owned by Mr. J. M. Levy, of New York City. But Mr. Levy objected, and as the United States Government is not allowed by law to expend money, except upon land owned by itself, the Secretary was obliged to restrict himself to the care of the monument and cemetery. Thus, only $8,352.83, of the $15,000, was expended. Mr. Levy himself, writes, that the work of the Government has been poorly carried out, the persons having it in charge seeming to take no interest in it, and that he is about improving the grave-yard at his own expense.

THE OLD MONUMENT IN MISSOURI.

When the new monument was in process of building, Dr. Laws, of Columbia University, Missouri, wished to get the old monument for his institution, because that State was an important part of the Louisiana purchase, made under the administration, and largely under the influence of Mr. Jefferson. Professor Fleet, who had charge of the acceptance of the monument from the Randolph family, says: "I feel that we have secured a treasure, that the old monument is much more valuable than the new — inexpressibly more precious, because of its memories, than the most costly and elegant new one that could be procured." The old monument was consequently set up in the campus of the University at Columbia.

Some doubts having been expressed concerning the genuineness of the monument and the tablet transported to Missouri, Mrs. E. W. Harrison, of Edge Hill, Va., the daughter of Mr. Thomas Jefferson Randolph, Mr. Jefferson's grandson and executor, wrote the following letter to Professor A. F. Fleet, of the Columbia University, to dispel these doubts and correct a statement in *Harper's Weekly* that the burying-ground was neglected:

"My father constantly suffered from the imputation through the public prints, that the burying-ground was neglected, when really the public was to blame. The grave-yard at Monticello, at the time of Mr. Jefferson's death, was enclosed by a double wall filled-in between with earth, in which was planted a pyracanthus hedge. This fell into decay in consequence of the crumbling of the stone-walls, and the whole was replaced in 1837, by a brick-wall, nine feet high, with stone caps on the pillars; the gates were of iron, and a grating of the same material closed an opening of eight or ten feet, left opposite the monument. It was hoped that this grating, affording a full view of the group of Jefferson graves would satisfy the public, and that they would not scale the walls. This hope proved illusive, for the slabs over Mrs. Jefferson and Mrs. Epes, which lay each side of Jefferson,

[1] In March 1888, the Committee on the Library reported this bill favorably. — Eds.

were carried off, piece by piece, till there was not an atom of them left. The slab marking Mrs. Randolph's grave was two thirds gone, when they were all replaced by the present monument, which covers the five graves of Jefferson, Mrs. Jefferson, their two daughters, and their son-in-law, Governor Thomas Mann Randolph. The locks on the gates were broken as fast as they were renewed. The grave-yard was constantly the object of care and attention of the family, but to no avail. Turf laid one month would be trodden up the next. Flowers were carried off, and the family of Jefferson felt utterly powerless to do anything for its protection. One individual, showing a piece of Jefferson's tomb, boasted that he had taken a sledge-hammer up from Charlottesville to secure it.

"The monument which was erected in accordance with Jefferson's directions, and which you now have in keeping was put up in 1833. The tablet staid in it until it became loosened by the rude treatment the monument received. Captain Uriah P. Levy, who was then owner of Monticello, discovered the insecure condition of the tablet, and kindly took it up to the house at Monticello. After he ceased to use Monticello as a summer residence, Colonel Randolph took the tablet in his carriage and brought it down to Edge Hill, where Mr. Fleet found it. It never received any injury, and was the only one which was ever cut. My father had directed the inscription to be cut on the granite, but it was too coarse to allow it. I do not know why such granite was chosen; I have the impression that it came from New Hampshire. Our Southern quarries had not then been opened. I find the date of this monument is fixed by a reference to an account of Colonel Randolph's commission merchant in Richmond, where an entry for forwarding 'a box of marble and two large pieces of granite' is made October 8, 1833. This 'box of marble' was the *first* slab placed over Mrs. Jefferson. When the brick-wall was put up, it had been all carried off, and then it was that the slabs mentioned above, which were placed over the wife and two daughters of Jefferson were put in place. They were mounted on granite, securely clamped with iron.

"The present monument was put up in 1883, and the perplexing question arose as to the disposition of the one which had rested for nearly fifty years over remains we held in such veneration. We could not leave it thrown out on the mountain-side. We did not like to bring it away, nor did we like to have it cut over to mark other graves. At this time we received through Mr. Fleet the application from the University of Missouri for it.

"We gladly accorded our assent to the proposition that they should become possessors of what we venerated so highly. We have never regretted the gift, and feel that in no other State in the Union would its poor, battered, weather-worn front have met with such a welcome.

"Our admiration for the State of Missouri could not have been heightened, but she has won our lasting gratitude by the veneration she has shown and honor she has done Mr. Jefferson. To us he was not alone the great man. He was to our father, a tender, loving parent, and from our earliest childhood we were taught to love him, and to venerate everything connected with his memory."

T. H. Bartlett.

[To be continued.]

THE ART OF HOUSE-BUILDING.[1] — III.

Chateau du Rocher à Mézanger France.

In like manner in whatever concerns the drinking-water, it is necessary to proceed with great care, and especially renounce prejudices up to this time held in honor. It is ordinarily believed that spring-water is always good. Here is an error which one cannot be too thoroughly on his guard against. Surface springs are due to the hasty infiltration of rain-water passing through layers of vegetable earth where there is abundant putrescible organic matter, which makes the water wholly unfit for domestic use. Deep springs, after being deprived of the impure matter which they hold in suspension, penetrate into calcareous cavities where they acquire ferruginous, sulphurous, iodic or calcareous properties which ought to disqualify them for drinking water for regular use. It is always prudent to have them analyzed.

Finally, the necessity in certain localities of digging wells creates evil conditions whose consequences may be terrible. Little by little there forms about these wells subterranean drainage currents which conduct towards the wells all the putrifying matter which ordinarily accumulates in the vicinity of dwellings. The currents insensibly affect a normal direction, and in excavating the ground in the neighborhood of ancient wells we find numberless ramifying channels for filth, especially in the country where the peasant accumulates manure and household refuse at a very short distance from his well. A very imperfect remedy is sometimes applied by lining the interior of the well with an impervious coating.

Infiltrations of this kind can engender sometimes most terrible epidemics. Typhoid fever and cholera are ordinarily propagated by this means when the disposition of the land lends itself to it. In France we have, amongst others, the example of the city of Auxerre, which was ravaged in 1880 by a terrible epidemic of typhoid fever. Dr. Dionis remarked that all the contaminated quarters were furnished with water from the spring at Veau, a little commune near Auxerre. He followed the course of this stream foot by foot without finding anything suspicious, but on arriving at the fountain-head he remarked that the water sprang from a spot which was dominated by a farmer's house near which was found, naturally enough, a heap of manure. He had the manure sprinkled with an aniline infusion, and some hours afterward, in the filtering-chamber below, the water was seen tinged with red. Following up his inquiry, Dr. Dionis learned that in this house there had been a short time before a case of typhoid fever and the dejections of the patient had been thrown onto the manure heap. There was no longer room for doubt; here was the beginning of the plague.

Cholera, we can no longer doubt, also conceals its germs in impure water. The recent example of Italy and the painstaking experiments made last year by the Italian physicians prove this. Cities provided with good potable water remained unvisited. Those which took their water from an impure source were desolated by the epidemic. The few cases of cholera which are produced every year in almost every country, and to which is given the title of sporadic cholera, also are due to the foolish use of water of bad quality. Once proved that in nature it is difficult to find a source of water which presents all the guaranties of desirable salubrity, the best thing to do is to take care to provide one's self with water scientifically good, whether it be natural or artificial.

To provide good natural water, rain-water must be stored up. This water, being really only distilled water, as the process of evaporation has deprived it of its mineral salts, without which the water is not fit for domestic use, and has in revenge saturated it with morbific particles which make it unhealthful, must, before being introduced into the reservoir, be made to pass through a layer of fine sand and fragments of marble mixed with iron ore, then another layer of quartz-pebbles and fine sand or pure silex. In passing through this filter, water absorbs mineral matter and is deprived of all the heterogeneous matters which it had assimilated during its fall through the atmosphere. The scientific detail of this operation is very minutely described in the book. In reality this only imitates by artificial mechanism means which chance employs to give us water of irreproachable purity. Whenever natural water cannot be used without danger, it does not follow that it must not be used for any purpose. It can be used for irrigating the garden, for decorative fountains and fish-ponds, since for these lesser purposes well-water is too costly because of the expense of pumping.

M. Boussard advises the system of automatic pumping invented by M. Tellier, an ingenious system which it would take too long to describe. It is enough to say that to determine the spontaneous ascension of the liquid there is needed only a roof to concentrate the heat, a solution of ammonia, and a very simple apparatus. The calorific action of the air upon the roof starts the ascending movement of the water. The cooling action of the elevated water assures the perpetuity of the movement. The heat of the air and coldness of the water, two inexpensive forces, can furnish a supply of 1,200 cubic metres an hour.

It is needless to say that the system of cisterns ought also to be rejected, not only because rain-water itself contains insufficient mineral matter, but because the roofs which ordinarily serve as collectors do not fulfil the desirable conditions of cleanliness. Romans condemned the system and Vitruvius says that cistern-water causes a hoarseness of the voice, which would be a very inconvenient thing for tenors or sopranos; but cistern-water has other defects which the Romans did not know and which modern science has distinctly catalogued.

But if we went on in this way, eliminating as we have been doing, we should run the danger of dying of thirst, seeing that natural waters which are really potable are very rarely found. The author has invented a system which makes it possible to have pure drinking water by the aid of a laboratory which forms a part of the mechanism of the kitchen of his model house. In the first place, the suspected water is distilled into steam and is then passed into a cylinder filled with compressed air, which serves in the first place to aërate the liquid, and in the second place to project it up into the reservoirs at the top of the house, where it can be distributed more easily. Before letting it pass into the pipes, it is made to pass into a second cylinder, into which are introduced powders and mineral salts in proportions which have been fixed by the family doctor, who, understanding the temperaments and habits of all the members, can regulate the proportions accordingly.

To complete this interesting study, M. Boussard advises all those who are forced either by taste or by habit to drink water, which is bad nine times out of ten, to provide themselves with a pocket filter of recent invention. This filter is so small that it can be carried in the waistcoat pocket.

Finally, by way of illustration, the author presents us, magnified to the size of a penny, the spectral images of twelve drops of water,

[1] "*L' Art de bâtir sa Maison*" Librairie des Imprimeries réunies, Paris. Continued from No. 643, page 190.

one of which alone is pure. The others contain the numberless terrifying types of those mysterious fauna which vegetate in these liquid depths. Here are grubs, snails, serpents and dragons, mushrooms and worms, infusoria, mysterious insects with hairy tentacles, cells where the monsters are still in formation, a repellent mass of busy animals, microbes and bacilli, each one of which bears in itself the seed of death. When one has attentively examined this plate, he understands that for any one who has to build a house the choice of drinking water for himself and his family is a question of life or death.

The nature of the soil on which the house rests also has a distinct influence on its healthfulness. During the summer the ground absorbs warmth; during the winter it parts with it. Every day the same phenomenon is produced in some small degree. We can conclude from this that at the depth of twenty metres the ground is submitted to constant oxidation which means that within this limit organic matters are entering into purification. Air, which like warmth circulates through the ground, serves as the vehicle for putrid vapors. The intensity of the phenomena varies according to the degree of permeability of the soil. Granite, basalt, metamorphic rock, schist, hard limestone, clays, fat marl and alluvial earth may be considered as impermeable. Gravel, sand and non-marly limestone, on the contrary, are permeable in a very high degree. They are, therefore, most suitable for house sites, for rain-water finds through them a normal drainage, while on impermeable soil water stands a long time unless the site is a slanting one, in which case the drying takes place naturally.

Nor ought the phenomenon of capillarity to be disregarded. Under this head we designate the facility with which liquids are drawn up from their proper level by the porosity of another body with which they are brought into contact. The walls of a house can pump the dampness from the ground on which they are planted with as much facility as a lump of sugar will soak the moisture up when it barely touches it at one corner. For these reasons the cellar and the sub-basement ought to be proscribed in well-built houses. The holes dug in the ground call thither the surrounding gases, always laden with oxidizing and putrifying elements, and through the natural suction that the warmth of the house exercises on the atmosphere of the cellars, these elements are drawn into the dwelling-rooms themselves. The cellars and store-rooms ought to be built by themselves, just as the Romans used to build them.

Sandy or rocky sites are the best for man's dwelling-house; clayey soil, on the contrary, is most unhealthy, and when one is obliged in spite of himself to build upon it, he should underdrain it in the most thorough way.

One cannot undertake the construction of a house without taking into consideration the natural ventilation through the house-walls. This ventilation is more powerful than is commonly believed. Pettenkofer made experiments which showed that the human breath could extinguish a candle by blowing through a brick-wall thirty-three centimetres in thickness. According to the most careful tabulation, provided there be a single degree's difference between the outside atmosphere and that within, there passes per hour and per cubic metre the volumes of air given below through the best known materials:

Sandstone,	1 69 cubic metres.	Limestone,	2.32 cubic metres.
Brick,	2.83 cubic metres.	Mortar,	3.64 cubic metres.

Ought this ventilation to be encouraged or checked? M. Boussard inclines to the negative, especially in small dwellings. The atmosphere deposits in the pores of the walls infecting particles which in rainy or damp weather there become putrid under the influence of the moisture. It is better to prevent this by coating the interior of the walls with plaster painted with oil-paint, varnished paper, or still better, with stucco painted in wax. M. Boussard lays down as a general rule that no one who wishes to build ought ever to attempt to do so without the advice and counsel of an architect; for the architect alone is really competent to resolve the technical difficulties and arrange processes by the aid of which can be united convenience, solidity and elegance. Even in its exterior the house ought to have an agreeable air, and the author gives a reason for it of such general interest that it must not be passed over. It must not be forgotten, says he, that a structure obstructs the view of the passer, from whom it conceals a bit of verdure, and it is not polite to compel him to gaze upon a deformity in stone. The most elementary good breeding counsels politeness toward the passer, and it is in this sense of politeness that architecture had its birth. This definition of the origin of architecture does not lack a tinge of poetry.

Beside the questions which I have just discussed, there is one the study of which is imposed on the architect, although very prosaic in its nature, for on its solution directly depends the health of the inhabitants. I mean the arrangement of the cesspools. In spite of the repugnance that such a subject inspires, it must be attacked with courage, for it is of vital importance. We know that a cubic metre of fecal matter, feces and urine together, furnish in twenty-four hours the following quantities of gases:

Carbonic acid.	315	metres, or	619	grammes.
Ammonia	149	"	113	"
Sulphuretted hydrogen . .	1.2	"	2	"
Carburetted hydrogen . .	579	"	415	"
Making	1044.2	"	1149	"

A cesspool of average capacity, or five cubic metres, furnishes then, when it is half-full, 1044.5 multiplied by 250 equals 2610 metres of infected gases at 15 degrees centigrade, and three times as much, or 8000 metres, at twenty-five or thirty degrees centigrade, every twenty-four hours.

M. Boussard is a partisan of the system first applied in England by Dr. Moule, which is also somewhat followed in America, if I am well informed. This system consists in separating the human dejections in such a fashion as to cast the solid parts into a receptacle containing vegetable earth, and where they arrive only after having rolled down a slope made of the same earth. Thus enveloped by earthy particles, the solid parts have no bad odor and no evil effect on the health. The author finds warrant for this proceeding in nature, and cites the example of the carnivora, whose excrement only amongst the mammifers contains morbific germs. The carnivora have a habit of scratching away the ground before satisfying their bodily needs, and afterwards covering their dejections with fresh earth. This example hardly impresses me: in the first place, it is only animals of the feline race which have this habit. Other carnivora, the dog, for instance, and the wolf, do not trouble themselves in this way. Cats act in this way in obedience to a need of neatness which is special to them, rather than for hygienic considerations. The system of Rev. Dr. Moule is good, not because cats scratch away the ground, but because science has been able to demonstrate that the mineralization of stercoraceous matters makes them perfectly inoffensive. The liquid portions are conducted into another conduit, where they are obliged to pass through a layer of vegetable earth, preferably garden-mould. Here is produced a curious phenomenon. The soil is populated with microbes, which, during the passage of this matter, devour all the animal particles and impurities of the urine, so that it passes from this laboratory in a state of absolute limpidity, "good enough to drink" says M. Durand-Claye, who has made a remarkable investigation into the matter. Among other things he threw a weak solution of chloroform onto this garden-mould before passing the urine through it, and he discovered in this case that the urine passed through the mould a short time afterwards came out quite as foul as it had entered. The microbes having been chloroformed, their health-creating functions had been suspended. The operation repeated at the end of a short time with the same filter without the sprinkling of chloroform gave, on the other hand, the most satisfactory results. Space lacks to describe the mechanism of these cess-pits, whose introduction has solved one of the most difficult problems of household hygiene.

I will say nothing more of what M. Boussard reports on the subject of his experiments in heating and the application of the hypocaust, as well as upon the employment of sewage for the irrigation of the kitchen-garden. On the arrangement of the hydropathic apparatus, lighting, decoration and furnishing, I am reg.etfully obliged to close the book, which is written with a clearness and simplicity which hides neither the erudition of the author nor the abundance of ideas. This book ought to be read not only by architects, although it was specially destined for them. Every head of a family, all those who have a house to build or to alter, all in fact who recognize the importance of the details of building from the hygienic standpoint, can read this book with profit. I will add only that this volume has been finely and brilliantly illustrated by the publishers; and while the mind finds here a good pasturage, the eye also finds its recreation.

H. Mereu.

BOOKS AND PAPERS.

JOHN BURNET, Scottish painter and engraver, was born in 1784, died in 1868.

Three thoughtful and interesting essays[1] are left us, illustrated by engravings from his own hand. Published separately in London in 1822, 1826 and 1837, they here in an American reprint become united in one volume. Hints on Composition, on Light and Shade, and on the Education of the Eye are the subjects descanted upon and illustrated. Written originally for the painter, yet the picture-maker of any sort, the art-lover, and he whose love for art is exceeded by the demands of his profession calling him to know something more of art principles, will find the book a profitable one and interesting. Were it offered the American reader at its original price, the art-student of moderate ambition, expectations and means, might, perhaps with reason, hesitate before making it his own, but when one-fourth that sum is now set as its price, and this price is one twenty-fifth of the amount necessary to purchase at present the original volumes, such hesitation is quite unnecessary. The typography of the book impresses one at first, as old in style and poor; but learning that it is a fac-simile by the photo-lithographic process, it is quickly excused and set down as quaint and interesting. The twenty-five full-page plates are well reproduced, but why the tissue sheets should cover them there seems insufficient reason, but, easily removed to the great comfort of the reader, they need not long be a hindrance to the satisfactory viewing of the plates.

[1] "*Practical Essays on Art*," by John Burnet. Edward L. Wilson, Publisher, 853 Broadway, New York. $4.00.

SOCIETIES

ENGINEERS' CLUB OF PHILADELPHIA.

AT the regular meeting of the Engineers' Club of Philadelphia, on April 7, 1888, Mr. Howard Murphy presented a diagram showing the results of Watertown Arsenal tests of the crushing strength of Potomac Red Sandstone and other building stones, bricks and brick masonry. The diagram shows the following:

No. of Tests.	MATERIAL.	Crushing strength in lbs. per sq. in.	
		FROM	TO
6	Lee, Mass., Marble	20,504	22,900
10	Potomac Red Sandstone	16,625	22,102
2	Conshohocken, Pa., Limestone	14,090	16,340
2	Hummelstown, Pa., Sandstone	12,810	13,610
6	Montgomery Co., Pa., Blue Marble	9,790	13,700
3	Philadelphia Pressed Bricks	7,210	9,050
4	Indiana Limestone	7,190	10,620
11	Philadelphia Hard Bricks	5,540	10,830
10	Ohio Sandstone	3,940	16,280
6	Philadelphia Brick Masonry in Cement Mortar	1,600	2,685
6	Philadelphia Brick Masonry in Lime Mortar	799	1,914

He also noted the other qualities of the Potomac Red Sandstone which are of special value to the engineer in construction — its durability under the action of frost, fire and wear, and its resistance to dampness.

Mr. Edward Hurst Brown mentioned that the reason the Potomac Red Sandstone was not more used for architectural purposes was that, while of a beautiful color, owing to its extreme hardness it was very difficult to dress, and also that very often in an apparently perfect stone a flaw would develop in dressing the face which would render it useless for facing-stone. He also mentioned having seen at Brentsville, Prince William Co., Virginia, an old church built of practically the same stone, taken from the neighboring Bristow Quarry, which had stood for over one hundred years, exposed to war and the elements, and which showed no signs of defects due to frost or action of the weather.

In consequence of the lateness of the hour, a communication by Mr. G. Y. Wisner, C. E., for years connected with the Lake Survey, entitled "The Physical Phenomena of Lake Harbors" was submitted by title. It shows that the progressive movement of sandy spits is attributable to the resultant waves and currents produced by the periodic oscillations of the lake surface, and that the effects are similar to those produced by the flood-tide on the Atlantic Coast, as explained by Prof. L. M. Haupt in his paper on the "Physical Phenomena of Harbor Entrances."

HOWARD MURPHY,
Secretary and Treasurer.

N. Y. CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS.

NEW YORK, April 18, 1888.

To the Honorable Abram S. Hewitt, Mayor of the City of New York and Chairman, etc.

Dear Sir,—I have the honor to inform you that at a special meeting of this Chapter, held yesterday afternoon, to consider your favor of the 13th inst., the same was read, as also the resolution, therein enclosed, of the Commissioners of the Sinking Fund, requesting this organization to suggest seven persons skilled in architecture, who will be suitable members of a committee of three experts, to assist the Commissioners in examining the plans submitted for a Municipal Building, proposed to be erected in the City-Hall Park, and determining upon the award of premiums.

After discussion it was resolved to comply with the desire of said Commissioners, and to select, by ballot, architectural practitioners from the list of members of this Chapter, the seven names receiving the greatest number of votes to be transmitted to your Honor as its nominees.

The result of the ballotting was as follows, the names being arranged at once alphabetically, (except my own), and with reference to number of votes:

Messrs. R. M. Hunt, R. M. Upjohn, E. H. Kendall, N. Le Brun, Geo. B. Post, C. W. Clinton, A. J. Bloor. Messrs. Hunt and Upjohn received the highest and the same number of votes; Messrs. Kendall, Le Brun and Post, the next highest and the same number; and Messrs. Clinton and Bloor, the next highest and the same number. I have the honor to be, Very respectfully,

(Signed) A. J. BLOOR, *Secretary.*

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.

A REGULAR meeting of the society was held April 17th, attended by fifty-six members and four visitors. The President, both Vice-Presidents, and all the Directors were present. Geo. H. Barbour and Lewis B. Fulton were elected members.

Phineas Barnes read an interesting paper on "Aluminium," the discussion of which was participated in by Wm. Metcalf, A. E. Hunt, T. P. Roberts, I. A. Beasbear and several others.

S. M. WICKERSHAM, *Secretary.*

COMMUNICATIONS

TO REPLACE AN OLD CEILING.

BROOKLYN, N. Y., April 19, 1888.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—We want suggestions as to the best kind of a ceiling to put up in a store 25 x 150 to replace the present plaster ceiling which constantly annoys us by falling, caused by jars from overhead and old age. Are there not other substances used except plaster or wood for ceilings.

CARY & STEVENSON.

[PLASTER on wire-lath would resist jarring. Duck or light canvas painted in distemper could be used. Northrop's iron ceiling could be applied without removing the present plastering, as could any of the many forms of fibre panels — leatherette, papier maché, asbestos, wood-pulp, or Spurr's papered veneers. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

BURNING GARBAGE.—The Chicago *Tribune* prints some testimony as to the success of the experiment in burning garbage in that city: March 6, the garbage furnace began operations. The furnace is built up from a ledge in a stone-quarry, the flat roof being nearly on a level with the street grade. Upon this roof teams are driven, the loads of garbage are dumped into chutes running to the floor below, and through other chutes coal is dropped to bed-rock of the furnace-room, some ten feet lower. There are two furnaces in the building, but one has been found amply sufficient thus far to burn the supply of garbage furnished and without working up to its fullest capacity. There is at this season of the year little offensive odor emitted from the garbage dumped. From the great square smokestack, through which everything passes off except the ashes, no unpleasant odor has been emitted except when chicken-feathers were burned, and it does not require the evidence of a sanitary expert to prove that this is not unhealthy. Assistant Health-Commissioner Thompson said they were now cremating about fifty tons, or yards, per day, and could just as well burn three times as much. "The works are perfectly satisfactory," he said, "and meet our expectations save in the matter of fuel. It was originally estimated that only about four tons of soft coal would be required per day to run the furnaces to the limit of capacity. I am now convinced that it will require from seven to eight tons per day. The amount of fuel used depends largely on the quality of the garbage. If we are trying to burn potatoes and turnips which have been spoiled on some dealer's hands, as they contain from eighty to ninety per cent. of water, an intense and protracted heat is required. On the other hand, dead dogs and cats, etc., contain enough carbon to burn themselves up and something else besides, provided they are encouraged. The cost will be less in summer than winter, because the garbage will be more inflammable. We started out with the idea of erecting furnaces of sufficient capacity to consume all garbage collected from the West Side, and I think we have that capacity. But we found that the South Water Street merchants were constantly having large quantities of decaying vegetables on their hands, often offensive, which they had great difficulty in disposing of in any sanitary way, and as we had ample capacity we determined to come to their relief, and have done so. During cold weather we could not get any considerable portion of the West Side garbage to the furnace in a suitable condition for combustion. Garbage, ashes, cinders, oyster-cans, beer-bottles, and old clothes, were heaped up and frozen into a solid mass, so that they could not be separated. Warmer weather will change these conditions, and when it shall have been made possible to gather the refuse of the entire West Side to the crematory there will be little chance for South Water Street. I have had two or three complaints about odors from the stack. I investigated one of them and found that the furnaces had not been running during the days complained of because there was no material on hand. The complainant was simply mistaken."

AN AUTOMATIC FIRE-ESCAPE.—The prospects for a new opera-house at Norwich, Ct., being encouraging, the *Norwich Bulletin* offers the following suggestions:

From the spectator's standpoint, the three essentials of a good opera-house are ease of access, a clean, commodious, comfortable and well equipped auditorium to sit in and stage to look at when one has entered, and the best facilities for egress. Sometimes the most admirable feature of an opera house, like the most pleasing characteristic of some cities, is the ample facilities for getting away. The recent disastrous fires in the theatres in Paris, Exeter and Oporto, not to mention the Brooklyn and other fires in this country, have demonstrated the necessity for large means of escape in cases of emergency. Even in theatres provided with fire escapes, lives are often lost in consequence of the panic, in which people lose their senses. This suggests that there is a grave defect in the fire-escape system which requires any volition or thought on the part of the audience, and there occurs to us only one way of avoiding this danger. It is to have individual fire-escapes, one for each opera-chair, which will work automatically. The modern type-setting machine may afford a helpful hint to the designers of the new opera-house. The types are arranged in compartments at the top of the machine. From each compartment descends a little channel, the channels gradually merging until they come to a focus at the point where the types are delivered. The types are released by operating upon keys like a type-writer, slide down through the channels, land on end

right side up, and are shoved along in a row with great speed, regularity and precision. Here we have the germ of a new fire-escape system. The seat of each chair should be made to swing downward as well as upward, and underneath it should be a trap-door opening into a safety chute. These traps may be sprung singly at the option of the occupants by stepping on electric buttons, such as are placed in the floor under dining tables, or may be operated all at once from a central point. The chutes will converge at an opening on the sidewalk at the side of the opera-house. It may be desirable to have separate deliveries from the 75 and 50 cent seats, so that the 75-centers will be discharged on one side of the building, and the 50-centers from the other. If this system should be adopted, great care would have to be used to prevent the system from going into operation when it was not needed. It would be surprising to Henry Irving and Ellen Terry, for instance, if, in midst of one of their most artistic scenes, somebody should touch the central button and the whole audience should sink through the floor out of sight. It would also somewhat astound an innocent pedestrian, who happened to be passing one of the delivery exits, to see, without the slightest warning, a stream of humanity fired out through a hole in the side of the building with a little more regularity than corn-cobs from a sheller. But with a little precaution, no trouble of this sort need occur. It must be evident that this system is superior to all others in existence, and that eventually it will be adopted by all the best theatres in the country, among which, it is to be hoped, the new Norwich Opera-House will rank.

The Sigiri Rock at Ceylon. — For the first time for a number of years the Sigiri rock in Ceylon has been scaled by a European; the feat on this occasion being performed by General Lennox, who commands the troops in the island. It is said, indeed, that only one European, Mr. Creasy, ever succeeded in reaching the summit. The rock is cylindrical in shape, and the bulging sides render the ascent very difficult and dangerous. There are galleries all round, a groove about four inches deep being cut in the solid rock. This rises spirally, and in it are fixed the foundation bricks, which support a platform about six feet broad, with a chunam-coated wall about nine feet high. The whole structure follows the curves and contours of the solid rock, and is cunningly constructed so as to make the most of any natural support the formation can afford. In some places the gallery has fallen completely away, but it still exhibits flights of the fine marble steps. High up on the rock are several figures of Buddha; but it is a mystery how the artist got there, or how, being there, he was able to carry on his work. The fortifications consist of platforms, one above the other, supported by massive retaining walls each commanding the other. Owing to the falling away of the gallery, the ascent in parts had to be made up a perpendicular face of the cliff, and General Lennox and four natives were left to do the latter part of the ascent alone. The top they found to be a plateau about an acre in extent, in which were two square tanks, with sides thirty yards and fifteen feet respectively in length, cut out of the solid rock. A palace is believed to have existed on the summit at one time; although time, weather and the jungle, have obliterated all traces of it. During the descent the first comer had to guide the foot of the next into a safe fissure: but all reached the bottom safely in about two and a half hours.— *St. James's Gazette.*

The Air of Edinburgh Theatres. — An interesting account has been given by Mr. Cosmo J. Burton of the amount of carbonic acid and organic matter in the Theatre Royal and Royal Lyceum Theatre of Edinburgh. At the time of the experiments the theatres were by no means full: nevertheless, the temperature was from ten to fifteen degrees above that recorded immediately before the houses were opened, while carbonic acid was multiplied from three to five times. Mr. Burton remarks that the vitiation of the air proceeds with extraordinary rapidity at first but the rate of change soon decreases, till towards the end of the performance the air becomes little or no worse, and, indeed, in a few instances it appeared to slightly improve. The atmosphere of all parts of the theatre was not equally vitiated; the air of the gallery was considerably worse than that of any other part of the house; the amphitheatre, dress-circle, and pit did not come in the same order as to degree of impurity in the experiments, but the pit was always worse than the dress-circle. The late Dr. Parkes stated that headache and vertigo are produced when the amount of carbonic acid in the air of respiration is not more than from fifteen to thirty volumes per 10,000, and our experience of some theatres leads us to suspect that Mr. Burton's results are not special to Edinburgh. The facts as to all theatres ought to be known; for the public had much better lose an evening's enjoyment than submit to the enforced inhalation of a polluted atmosphere for a number of hours.— *The Lancet.*

The Monument to Mozart at Vienna. — "Readers may have noticed in recent news from Vienna," says the London *Musical World*, "that the prize model for the Mozart monument to be erected in that city has, after further consideration, been rejected; one, and not the least important, reason being that Vienna has already two sitting musical heroes in Beethoven and Schubert. A fresh competition has therefore been decided upon, leaving the committee pro tem. without a model, without a suitable spot (to be chosen anew to suit the new design), minus about £480 paid for three rejected prize models, and only about £4,000 cash in hand, and with the realization of the scheme relegated to a somewhat more distant future. This is much to be regretted, especially as the Viennese, with all their genuine admiration and love for the great Salzburg composer, have an omission to repair. For not only is Mozart's grave unknown, but the numerous houses where he lived and wrote some of his greatest works remain, with the two exceptions to be mentioned later on, unprovided with any memorial tablets, or other tokens to indicate the fact. It is true that the use of such tablets on private houses is of comparatively recent origin, but of late this praiseworthy custom has become pretty general in most European countries, more particularly in Italy, where not only native, but also foreign genius is honored in this way. Thus, for instance, in the Corso at Rome, the inscription may be seen, 'Here lived Wolfgang Goethe, and wrote immortal works.'"

Van Beers and His Alleged Works. — Jan Van Beers, a Belgian painter in Paris, has got himself into trouble by a misplaced regard for his reputation. He brought action against an Ostend dealer for having on sale pictures signed by his name which he declared he did not paint. It came out on trial that he habitually put his signature on copies of his pictures made by pupils, and also touched up their originals and signed them; and even that an association had been formed in Paris to manufacture his pictures. He himself was obliged to admit these facts, while he insisted that the four pictures of the Ostend dealer were not from the factory, but were real counterfeits, so to speak. The public prosecutor, however, dropped the suit, and all Van Beers gets by his motion is a world-wide extension of his fame, with a flaw in it. The morality that was good enough for Rubens won't do in this age. A good many works supposed to be by Van Beers are owned in this country, by the way. — *Springfield Republican.*

TRADE SURVEYS

Commercial and manufacturing interests are endeavoring to explain the causes and measure the extent of the present depression in prices, with a view of forecasting business probabilities for the last half of the year. The moment the most careful writer steps beyond a connected statement of all the facts bearing on the situation, so soon does he step into marshy ground. When all the facts are hammered with a pestle, the resultant product is a strong probability that trade and manufacturing conditions instead of getting worse will get better. In arriving at this conclusion, it is necessary to leave out of account the artificial depression in stocks, although just at present there is a greater demand for than supply of first-class railway securities, and a still better demand is predicated on the fact, if it is a fact, that the future heavy bond-purchases by our Government, and the decreasing of the rate of interest in Great Britain, will increase the volume of employment-seeking capital and thus boom stocks. The theory is fine, but stock predictions too frequently turn out wrong. The more fruitful field for intelligent opinion and better comprehension of trade tendencies is to be found in the interior among manufacturing, railroad-building, and other great but secondary interests. The patent facts to-day are these: Enterprise is more circumspect in the West, more feverish in the South, values are declining and the supply of products is nearly equal to demand, as to producing capacity. Production is restricted very widely. This is notably the case in the iron trade. Railroad equipment concerns, from locomotive-makers down, are all busy. Lumber manufacturers are crowding ahead East, West and South, as though the markets were bare of stocks. Coal production is gaining on last year notwithstanding the supposition of lessened industrial activity. Furniture manufacturers have done fully as much work this year as last. The carriage and wagon-makers predict as much business. Builders are undecided. In New York, a rather general falling-off of work is complained of. In Philadelphia, architects say they started out with considerable work, but new work is slow. In Chicago, this year's plans have been interfered with by a number of influences. In the Northwest a great deal of building will be done, as much as last year, probably, and throughout the prairie States. According to advices from Chicago lumber, iron, glass and other interests, there will be more building done in city, town and country. Even the rail-makers are not willing to admit that the conclusions reached by one or two guessers, that only 8,000 miles of road will be built this year, are correct. They say the emergencies have not arisen which are to determine the course of builders. This is correct. There are schemes on foot at this time among American and foreign financiers, which, if successful, will most probably result in the immediate prosecution of three or four important railroad-building enterprises in the West and Southwest, as well as in the South. From this summary of ascertained fact the influence is fairly deducible that a healthier industrial activity is probable during the last half of the year, leaving out of account stock speculations and surprises. The American notion is that unless manufacturers have from three to six months' work booked ahead at high prices, that the country is on the road to destruction. The downward tendency in prices will continue in spite of all manner of trade combination. Even the copper-trust, which has carried away this year forty million pounds of refined and crude copper in order to enhance values, has difficulties to encounter that jeopardizes its ultimate success in cornering the world's supply. The race which capital and enterprise and productive capacity are each and all running, must be productive of good results when they have fully formulated themselves. The industries will soon be freed from threatened tariff reductions, but the results of the coming campaign will warn manufacturing interests to put their shops in readiness for a general and moderate reduction of duties. The disbursements of capital at home and abroad, the possibilities of foreign war, the extremely low prices of raw resources throughout the United States all point to the greater activity in American financial circles, and the steady employment of labor in the newer States. The country will surprise itself in its ability to endure without the support of all of the four thousand little tariff props on which it has rested for so many years. Much of the caution displayed by long-headed enterprise, and what we mistake for fear, is due to the underlying conviction that a rearrangement of our fiscal affairs is an early probability. The bugbear of labor strikes is disappearing. The evils that trade combinations seemed to threaten a few months ago are not so great as depicted. The ability of the country to shut down brakes has been demonstrated. The dangerous real-estate speculation in the West has been checked. The borrowing West will continue to borrow, but will not get beyond its paying ability. A multitude of new interior markets are springing up, and builders and architects, especially in the West, see grand opportunities in the near future for building enterprise. This diversification of the industries is the secret of the great activity of the next few years. The managers in many of our great industries give utterances to convictions of the certainty of great building activity in the near future. The steadiness of wages, the greater assurance of constant work and the growth of desire to be somebody, are all contributing to make the laborer a worker for a home, and this tendency is being stimulated by the wonderfully rapid growth of building and loan associations, and by the liberal policy of money-lending agencies throughout the newer sections of the country.

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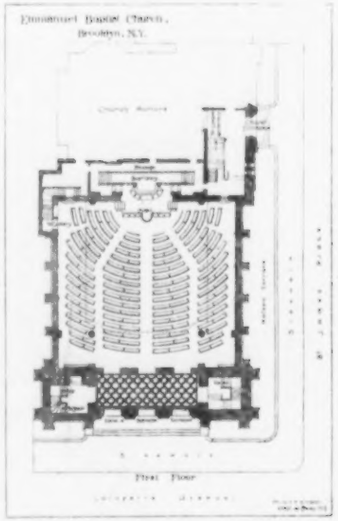

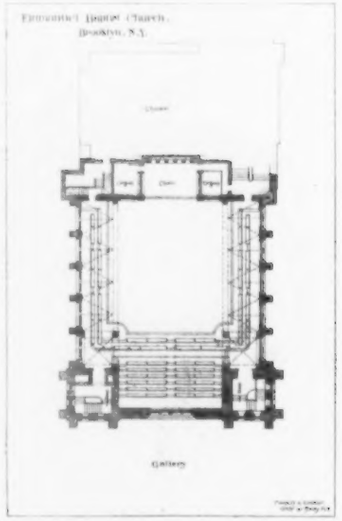

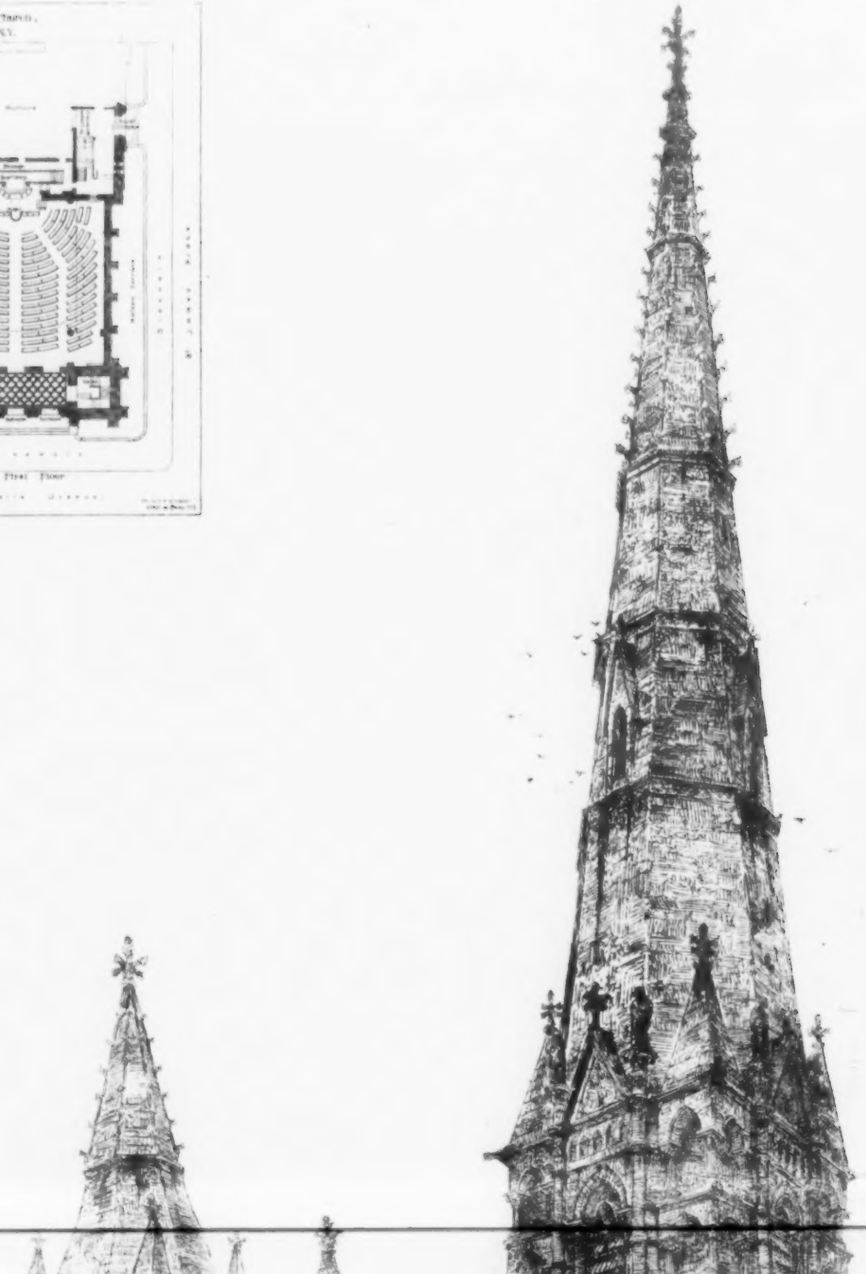

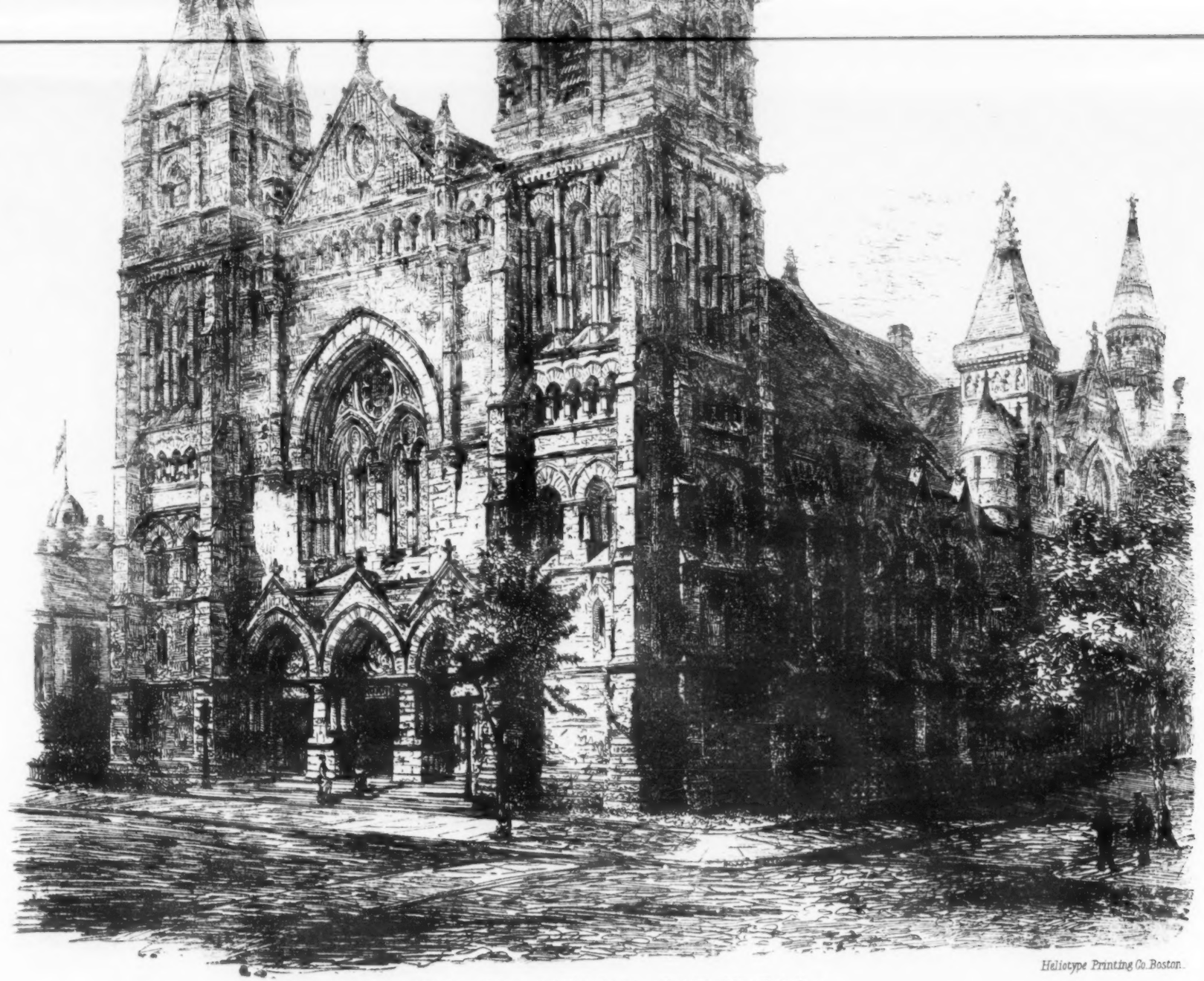

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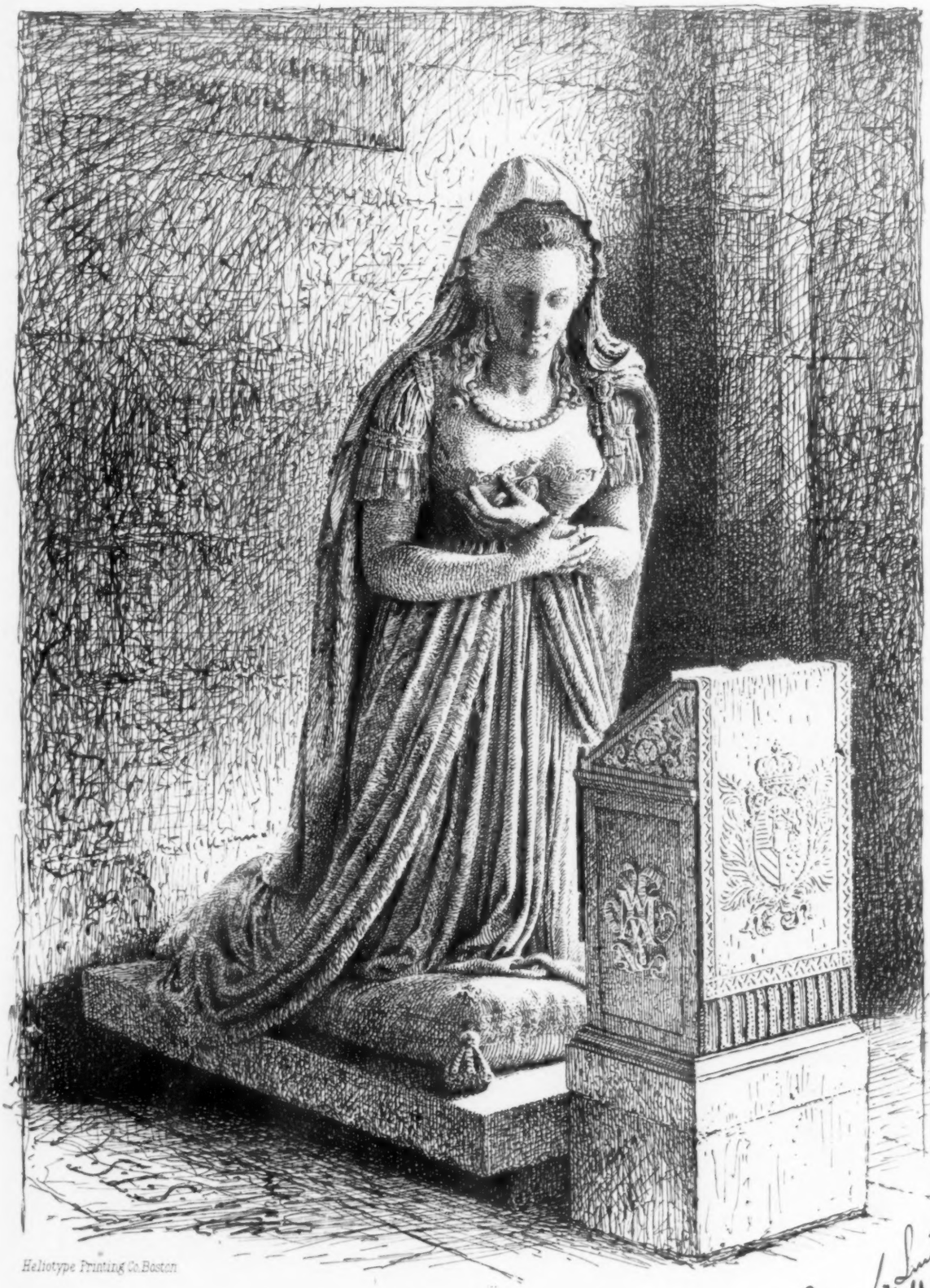

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